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Report to the Chairman, Subcommittee on Interior and Related Agencies, Committee on Appropriations, House of Representatives

March 1988

PARKS AND RECREATION

Park Service Managers Report Shortfalls in Maintenance Funding

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Resources, Community, and
Economic Development Division

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March 21, 1988

The Honorable Sidney Yates
Chairman, Subcommittee on Interior
and Related Agencies
Committee on Appropriations
House of Representatives

Dear Mr. Chairman:

On October 16, 1986, you requested that we examine several issues pertaining to the maintenance needs of the National Park Service (NPS), an agency of the Department of the Interior. Subsequently, we agreed with your office to focus our work on (1) the adequacy of funding for NPS maintenance activities, the extent to which maintenance in the park system is being deferred, and the effect, if any, of such deferrals; (2) the effect that the current level of funding is having on maintenance staffing; (3) the condition of and funding adequacy for the park road system; and (4) the effectiveness of the servicewide Maintenance Management System in improving the parks' ability to identify, report, and address maintenance needs. This briefing report contains the results of our work, which we presented to your office in an earlier briefing.

In summary:

- Most park unit managers responding to our questionnaire have had to defer, at least, some needed maintenance—a situation attributable largely to shortfalls in funding for NPS maintenance activities. The impact of maintenance deferrals has been the deterioration of park assets.
- Most park unit managers indicated that they have experienced inadequate maintenance staffing at the current level of funding.
- The Federal Highway Administration rated half of NPS' roads in poor condition. According to most of the park unit managers responding to the questionnaire, the current funding level is not adequate to prevent road conditions from declining further.
- NPS has now begun to install the servicewide Maintenance Management System at each of the park units; however, it is too early to tell how much of an impact the system will have in improving the parks' ability to identify, report, and address maintenance needs.

Of the 267 park unit managers responding to our questionnaire, about 75 percent reported that they are deferring maintenance because of

funding shortfalls. They reported that these shortfalls total $1.9 billion. While nearly all the managers reporting shortfalls had, on average, a similar percentage deficiency between what was needed and what was funded, most of the shortfall—about $1.4 billion, or 74 percent of the total—was reported by 20 park unit managers. The result of maintenance deferrals, as reported by the park unit respondents, is asset deterioration. Section 3 provides additional information on the adequacy of funding for maintenance activities, the extent to which maintenance in the NPS is being deferred, and the effect of the deferrals.

Most of the park unit managers responding to our questionnaire indicated that funding shortfalls have also resulted in inadequate maintenance staff levels. Specifically, 81 percent reported that staff levels were not adequate in fiscal year 1987--an average of 35 percent below that believed necessary by park managers to perform all necessary maintenance functions. As in the case of funding shortfalls, they reported that the result of inadequate staffing is maintenance deferral and asset deterioration. Section 4 contains additional information on how the current level of funding is affecting maintenance staffing in NPS.

The managers' responses, as well as our site visits and information obtained from the Federal Highway Administration, also suggest that (1) the current overall condition of park roads is poor and (2) funding for road maintenance is not adequate for NPS to keep park road conditions from declining further. Specifically, the Federal Highway Administration currently estimates that half of the park roads are in poor condition. They also estimate that additional road deterioration can be expected at the current funding level. Bridges and tunnels, on the other hand, show a marked improvement in condition since 1981. The result of funding shortfalls for road maintenance has been maintenance deferral and asset deterioration, some of which is health and safety related. Additional information on the condition of the NPS road system is contained in section 5.

In July 1986, NPS began developing the Maintenance Management System to provide a systematic, servicewide approach for planning, organizing, directing, and reviewing its maintenance activities. However, at the present time, it is too early to tell how much the system will improve the parks' ability to address maintenance needs. Installation of the system just began in summer 1987, and full implementation is not planned until late 1989. On the basis of our review of the system design and discussions with NPS officials, the system should have the essential

elements necessary to help parks better document maintenance needs and manage maintenance activities. Further, while park managers currently assign priorities to maintenance activities to ensure that essential work is accomplished, the Maintenance Management System should provide a better tool for making such decisions. Additional information on the system is discussed in section 6.

GAO Observations

The funding shortfalls that park unit managers reported in our questionnaire have resulted in maintenance deferrals—as our site visits to selected park units confirmed. As a consequence, some park assets have deteriorated and the backlog of deferred maintenance projects has grown. Moreover, according to some park unit managers, the deterioration of some assets is so advanced that, if not repaired or maintained soon, they may be lost permanently.

We recognize that no simple solution exists for ensuring adequate maintenance funding. Increased funding, for example, may not be feasible given the current budget constraints being faced governmentwide. Similarly, alternative sources of funding, such as donations and the use of volunteer forces, may be practical solutions in some parks, but not all.

The Maintenance Management System should also provide a partial solution, by enabling park unit managers to more effectively manage maintenance servicewide. More importantly, it should provide managers with a better tool to use in assigning current NPS priorities to maintenance activities. The use of this tool becomes particularly crucial in times of budgetary constraints, when managers need to maximize the effective use of available resources.

The extent to which the Maintenance Management System will mitigate the effects of funding shortfalls through increased efficiency and effectiveness will not be known until the system is fully implemented. However, because the reported need is so much greater than available funding—a difference of $1.9 billion in fiscal year 1987—it is doubtful that the Maintenance Management System, alone, will be able to solve the funding shortfall problem.

Difficult as these problems may be, until a solution is reached servicewide, the backlog of deferred maintenance projects will more than likely continue to grow and assets will continue to deteriorate. Our observations are presented in greater detail in section 7.

Scope and Methodology

To complete our work, we sent questionnaires to all 337 park unit managers listed in NPS' 1985 Park Index, asking them to report on the adequacy of funding for park maintenance and the extent and impact of any funding shortfalls. We also interviewed NPS officials responsible for servicewide maintenance activities and visited 12 park units to observe park maintenance activities. In addition, we contacted Federal Highway Administration officials to discuss their assessments of park road conditions and interviewed officials from three public park systems utilizing maintenance management systems similar to NPS' planned system in order to determine the extent of benefits achieved. Additional information on the scope and methodology of our work is discussed in section 1.

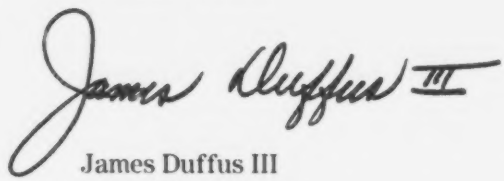
Agency Comments

We obtained comments on a draft of this report from NPS. NPS agreed with our findings and observations. (See app. II.)

We are providing copies of the report to the Secretary of the Interior; the Director, National Park Service; the Director, Office of Management and Budget; and other interested parties. Copies will be made available to others upon request.

Related GAO reports are listed in appendix III, and major contributors to this report are listed in appendix IV. If you have any questions, please call me at (202) 275-7756.

Sincerely yours,



James Duffus III
Associate Director

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Contents

Letter		1
Section 1 Objectives, Scope, and Methodology		10
	Objectives	11
	Scope and Methodology	12
Section 2 Park Maintenance and Funding		15
	Definition of Park Maintenance	16
	How Maintenance Is Funded	16
Section 3 Funding Shortfalls Are Resulting in Maintenance Deferrals and Asset Deterioration		18
	Park Unit Managers Report Shortfalls in Funding for Maintenance	19
	Funding Shortfalls Are Resulting in Maintenance Deferrals and Asset Deterioration	22
	Some Deferred Maintenance Is Health and Safety Related	24
	Site Visits Document Asset Deterioration	26
Section 4 Maintenance Staff Levels Are Not Adequate at Current Funding Levels		39
	Park Unit Managers Surveyed Reported a Shortfall in Maintenance Staffing	40
Section 5 Overall NPS Road Conditions Rated as Poor, and Funding Is Not Adequate to Prevent Further Decline		43
	Profile of the NPS Road System	44
	NPS Road Conditions Have Declined	45
	Road Funding Reported as Inadequate	47
	Roads Are Deteriorating Because of Insufficient Funding	49
	Site Visits Document Road Deterioration	50

Section 6 It Is Too Early to Assess MMS' Effectiveness		61
	An NPS Maintenance Management System Was Mandated by the Congress	62
	Important Elements of a Maintenance Management System	62
	Since MMS Is Just Now Being Implemented, It Is Too Early to Assess Its Effectiveness	64
	Other Park Systems With Similar Systems Cite Beneficial Results	65
Section 7 GAO Observations		67
	Observations	68
Appendix I Copy of Questionnaire Sent to Each of the 337 Park Units		70
Appendix II Comments From the Department of the Interior		85
Appendix III Related GAO Reports		87
Appendix IV Major Contributors to This Briefing Report		88
	Resources, Community, and Economic Development Division, Washington, D.C.	88
	Seattle Regional Office, Seattle, Washington	88
Tables	Table 1.1: Summary of Questionnaire Responses by Region	13
	Table 1.2: Summary of Sites Visited by Park Unit, NPS Region, and Type of Unit	13

Table 3.1: Most of the Maintenance Funding Shortfalls Reported for Fiscal Year 1987 Are for Capital Improvement Projects 19
Table 3.2: Nearly Three Quarters of Maintenance Funding Shortfall Reported by 20 Park Managers 21
Table 3.3: Health and Safety-Related Maintenance Most Commonly Deferred Is for Trails, Public Buildings, Roads, Equipment, and Utility Systems 25
Table 5.1: Fifty Percent of NPS Roads Are in Just 15 Parks 44
Table 6.1: Summary of Maintenance Management System Key Elements 63

Figures

Figure 3.1: Seventy-Five Percent of Park Unit Managers Reported Varying Levels of Maintenance Deferrals Due to Funding Shortfalls 22
Figure 3.2: Seventy Percent of Park Unit Managers Reported, at Least, Moderate Increases in Asset Deterioration Due to Funding Shortfalls 23
Figure 3.3: Deterioration of Employee Quarters at Yellowstone National Park, Wyoming 27
Figure 3.4: Debris Located on the Parade Ground at Alcatraz Island, Golden Gate National Recreation Area, California 28
Figure 3.5: Defacement of a Public Restroom at Golden Gate National Recreation Area, California 29
Figure 3.6: Uneven and Pitted Sidewalk Surface at Gateway National Recreation Area, New York 30
Figure 3.7: Conditions Inside the Ryan Visitor Center, Gateway National Recreation Area, New York 31
Figure 3.8: Condition of a Fort Hancock Historic Structure, Gateway National Recreation Area, New York, in 1987 32
Figure 3.9: Condition of the Same Structure in 1976 33
Figure 3.10: Collapsed Wall of Central Wharf, Salem Maritime National Historic Site, Massachusetts 34
Figure 3.11: Vegetation Growing in Joints of Canal Wall, Lowell National Historic Park, Massachusetts 36
Figure 3.12: Typical Pit Toilet Located in Yosemite National Park, California 38
Figure 4.1: Adequacy of Maintenance Staff Levels Has Declined Since Fiscal Year 1982 41

Figure 5.1: Seventy Percent of NPS Roads Are in Three Regions 45
Figure 5.2: FHWA Studies Show a Decline in NPS Road Condition From 1981-87 46
Figure 5.3: Fifty-Eight Percent of Park Unit Managers Reported a Decline in Road Condition Since 1982 47
Figure 5.4: Seventy-Four Percent of Park Unit Managers Reported Road Maintenance Deferrals Because of Funding Shortfalls 49
Figure 5.5: Example of Road Surface Deferred Maintenance at Yosemite National Park, California 51
Figure 5.6: Example of Roadside Maintenance at Yosemite National Park, California 53
Figure 5.7: Example of Road Surface Deterioration at Yellowstone National Park, Wyoming 54
Figure 5.8: Cracks in Road Surface at Yellowstone National Park, Wyoming 56
Figure 5.9: Raised Wave of Asphalt in the Center of a Yellowstone National Park Road, Wyoming 57
Figure 5.10: Example of the Condition of Drainage Ditches at Yellowstone National Park, Wyoming 58
Figure 5.11: Example of Roadway Shoulder Conditions in Yellowstone National Park, Wyoming 59
Figure 5.12: Parking Lot at the Boat Bay Campground, Yellowstone National Park, Wyoming 60

Abbreviations

FHWA	Federal Highway Administration
GAO	General Accounting Office
MMS	Maintenance Management System
NPS	National Park Service
PRIP	Park Restoration and Improvement Program

Objectives, Scope, and Methodology

- Our objectives in this review were to
  - determine the adequacy of funding for NPS maintenance and the extent and effect of maintenance deferrals,
  - determine the impact of current funding levels on maintenance staffing,
  - assess NPS' road conditions and the adequacy of road maintenance funding, and
  - determine the new Maintenance Management System's ability to better address maintenance problems.
- To accomplish these objectives, we
  - sent a questionnaire to all 337 park units identified in NPS' Park Index,
  - interviewed NPS officials and visited 12 park units,
  - analyzed the Federal Highway Administration road condition studies, and
  - interviewed officials from other park systems with maintenance programs similar to NPS' Maintenance Management System.

Objectives

The Department of Interior's NPS operates and maintains an extensive inventory of buildings and other facilities. NPS estimates that the total asset value of the inventory exceeds $50 billion and includes 7,975 miles of roads, 1,367 bridges, 1,300 water systems, 125 sewage treatment plants, and over 16,000 buildings totaling 25 million square feet.

NPS has developed conflicting information as to the level of funding needed to maintain park assets. In fiscal year 1985, NPS concluded a 4-year $1.1 billion Park Restoration and Improvement Program (PRIP) designed to rehabilitate aging park facilities and upgrade maintenance and resource preservation programs. During this period of accelerated funding, NPS emphasized funding for known health and safety-related deficiencies in the parks. During the fiscal year 1986 budget justification, NPS reported that the backlog of critical health and safety work had been substantially reduced. As a result, NPS proposed a $21-million cut in the fiscal year 1986 park management maintenance budget. During that time, an NPS task force found that to adequately fund the agency's park management maintenance needs, an increase of approximately $64.2 million over the fiscal year 1985 funding level would be required. The amount finally appropriated for park management maintenance in fiscal year 1986—$229 million—represented a decrease of $7 million from the 1985 fiscal year funding level of $236 million.

On October 16, 1986, the Chairman, Subcommittee on Interior and Related Agencies, House Committee on Appropriations, asked us to address the issue of maintenance funding. The Chairman expressed concern that NPS still does not have funds sufficient to maintain properly its facilities and that this will once again lead to a decline in the condition of park assets.

As agreed with the Chairman's office, the objectives of our review were to

- determine to what extent maintenance in the NPS is being deferred, and what effect, if any, the deferral is having;
- determine how the current level of funding is affecting maintenance staffing in the national park system;
- assess the current condition of roads in the national park system and determine whether maintenance of these roads is adequately funded; and
- determine whether NPS' new Maintenance Management System will improve the parks' ability to identify, report, and address maintenance needs.

Scope and Methodology

To address the objectives of our review, we developed a questionnaire that allowed us to obtain current information about maintenance conditions at all national park units. The questionnaire requested such information as (1) the level of identified need and funding received for fiscal year 1987 park maintenance and repair work; (2) the extent and priority of work deferred because of shortfalls in maintenance funding; and (3) the impact, if any, deferred maintenance has had on park services or facilities. For road systems, the questionnaire asked for information on fiscal year 1987 park road conditions, fiscal year 1987 funding for road maintenance, and trends in road conditions since fiscal year 1982. The questionnaire also asked for information about maintenance staffing patterns from fiscal year 1982 through fiscal year 1987 and the adequacy of current staffing levels to properly perform needed maintenance. (See app. I.)

We pretested the questionnaire at 10 different parks in 3 regions and reviewed it with staff in NPS' Engineering and Safety Services Division, the division responsible for maintenance policy and guidance within NPS. After modifying the questionnaire to reflect suggested changes and recommendations obtained during the pretest, we distributed it to park superintendents of all 337 park units identified in NPS' 1985 Park Index. These units include national parks, recreation areas, parkways, and other areas under NPS' jurisdiction.

We received 267 responses to our questionnaire from park managers. Some of the responses include consolidated data for several park units because park managers have maintenance responsibility for more than one park unit. In total, 315 park units, or 94 percent of the total number of parks, are represented in the responses received (table 1.1). The data in the report are presented in terms of the number of park managers who responded to our survey.

Table 1.1: Summary of Questionnaire Responses by Region

Region	Number of park units	Number of questionnaire responses	Number of park units represented	Percentage of units responding
Alaska	23	11	15	65
Mid-Atlantic	29	24	29	100
Midwest	31	27	29	94
North Atlantic	35	25	33	94
National Capital	28	13	22	79
Pacific Northwest	15	13	15	100
Rocky Mountain	41	37	40	98
Southeastern	55	47	52	95
Southwestern	36	31	35	97
Western	44	39	45	100
Total	**337**	**267**	**315**	**94**

To supplement the questionnaire, we made site visits to 12 parks in 4 regions, as shown in table 1.2. These parks were selected because of their location and because they provide a good mix of park types and sizes. During the site visits, we interviewed the park superintendents, chiefs of maintenance, budget officers, and other park officials to verify responses to the questionnaire. In addition, we observed park maintenance activities and facilities to document maintenance conditions reported. We also reviewed NPS road condition assessments made by the Federal Highway Administration (FHWA) and discussed these assessments with FHWA officials.

Table 1.2: Summary of Sites Visited by Park Unit, NPS Region, and Type of Unit

Park Unit	NPS Region	Type of Unit
Cape Cod	North Atlantic	Seashore
Gateway	North Atlantic	Recreation Area
Lowell	North Atlantic	Historic Park
Salem Maritime	North Atlantic	Historic Site
Everglades	Southwestern	National Park
Eugene O'Neill House	Western	Historic Site
Golden Gate	Western	Recreation Area
John Muir House	Western	Historic Site
Muir Woods	Western	National Monument
Point Reyes	Western	Seashore
Yosemite	Western	National Park
Yellowstone	Rocky Mountain	National Park

To consider whether NPS' new Maintenance Management System will improve the parks' ability to identify, report, and address maintenance needs, we interviewed NPS officials responsible for the development and implementation of the system. In addition, we visited two parks where the system is currently being installed—Everglades and Yosemite—and discussed the system with the park superintendents and maintenance staff.

We also interviewed several users of similar maintenance management systems to obtain their opinions of benefits and improvements provided by the system. These users—Parks Canada, Tampa Bay Parks Department, and the Seattle Parks Department—were selected because they had been included as examples of park organizations benefiting from maintenance management systems in our 1984 report National Park Service Needs a Maintenance Management System (GAO/RCED-84-107, June 1, 1984).

Our work was performed between January 1987 and September 1987 in accordance with generally accepted government auditing standards.

Park Maintenance and Funding

- Park maintenance is an inclusive term for activities to operate, keep up, preserve, and repair park facilities.
- Funding for maintenance comes from three sources:
  - park,
  - region, and
  - headquarters.

Definition of Park Maintenance

Park maintenance is an inclusive term for activities to operate, keep up, preserve, and repair park facilities. These activities range from day-to-day trash collection and periodic road resealing to major rehabilitation of historic structures. For our review, we divided park maintenance into three types, as follows:

Base Operational Maintenance

Base operational maintenance activities are performed on an annual, recurring basis and are intended to meet routine, daily park needs. Typical work performed under base maintenance includes janitorial and custodial services, snow removal, operation or purchase of utilities (water, sewer, or electricity), groundskeeping, air filter changing, faucet washer replacement, and other minor repairs.

Cyclic Maintenance

Cyclic maintenance activities recur on a periodic cycle of greater than 1 year. Typical projects include reroofing or repainting buildings, overhauling engines, and refinishing hardwood floors. For our review, we also included in this category repair and rehabilitation projects designed to restore or extend the life of an asset. Examples include replacing sewer lines, repairing building foundations, and rehabilitating campgrounds and trails

Capital Improvements

This maintenance category includes the reconstruction or replacement of park facilities, the preservation of historic and cultural resources, and the repair and reconstruction of park roads. In general, projects fitting this category are major projects that require more than 1 year to complete.

How Maintenance Is Funded

Overall, NPS programs, budgets, and controls funds at three levels—the park or field unit, regional office, and servicewide (headquarters) level. Base operational maintenance activities are funded and controlled at the park level. Specifically, each park unit receives a base budget that is used to fund all park functions, including maintenance. Park superintendents have considerable latitude in deciding how base funds will be used. In fiscal year 1987, about $191 million was enacted for park base operational maintenance.

For cyclic maintenance, each region receives a budget allotment to distribute among its park units. The units compete for regional funding by submitting a list of priority projects to their regional office, which in

turn establishes regional priority lists.[1] The regions then select projects to fund from the list. In fiscal year 1987, authorized funding available for cyclic and repair and rehabilitation maintenance totaled $49 million.

Funding for capital improvements maintenance is allocated on a servicewide basis. Parks submit requests for capital improvements funding to regions, which develop regional priority lists and submit them to headquarters. Headquarters establishes a servicewide priority list and selects projects for funding. Capital improvements funding available in fiscal year 1987 totaled about $259 million.

[1]NPS' Servicewide Development Objectives guide which maintenance activities receive priority. A high priority, for example, is placed on health and safety projects (primarily utilities). Of lesser importance is the rehabilitation of a deteriorated facility that does not pose an immediate health and safety threat.

Funding Shortfalls Are Resulting in Maintenance Deferrals and Asset Deterioration

- For fiscal year 1987, a $1.9-billion shortfall was reported:
  - Capital improvements projects account for 94 percent of the shortfall.
  - Twenty park units account for 74 percent of the shortfall.
  - Twenty-four managers reported adequate funding.
- Seventy-five percent of managers reported varying levels of maintenance deferrals and 70 percent reported asset deterioration:
  - Roads, trails, and buildings were affected more than other types of park assets.
  - Some deferred maintenance is health and safety related.

Park Unit Managers Report Shortfalls in Funding for Maintenance

The 267 park unit managers who responded to our questionnaire reported total fiscal year 1987 needs of $2.2 billion and funding of $308 million, resulting in a shortfall of $1.9 billion.

The reported shortfall was greatest for capital improvements projects (see table 3.1). Specifically, for capital improvements, park managers reported total needs of $1.7 billion and fiscal year 1987 funding of $93 million—a 94-percent shortfall. Approximately 56 percent ($922 million) of the capital improvements shortfall was reported for road repair projects. The remaining 44 percent ($676 million) was for general park facilities construction projects. In addition, park managers reported a $164-million cyclic need of which $39 million was funded in fiscal year 1987. The $125-million cyclic shortfall represents 76 percent of the reported need.

Of the three funding sources we reviewed, base operational funding came closest to meeting identified needs. Park managers reported $214 million in base needs and $162 million in fiscal year 1987 funding, leaving a shortfall of $52 million, or about 24 percent of identified needs.

In addition to the three maintenance categories we identified, some park unit managers voluntarily reported other maintenance needs totaling $152 million. Reported fiscal year 1987 funding of $14 million to support these needs left a shortfall of $138 million. This shortfall represents a myriad of needs including employee housing, equipment replacement, and historic restoration.

Table 3.1: Most of the Maintenance Funding Shortfalls Reported for Fiscal Year 1987 Are for Capital Improvement Projects

Types of park maintenance	Amount needed	Amount funded
Base operational maintenance	$214 million	$162 million
Cyclic maintenance	164 million	39 million
Capital improvements	1.7 billion	93 million
Other (miscellaneous)	152 million	14 million

Maintenance Shortfall Concentrated in 20 Parks

Even though, in total, park managers reported a maintenance funding shortfall of $1.9 billion, most of this shortfall—$1.4 billion, or 74 percent—was reported by 20 of the 267 park unit managers responding to our questionnaire (see table 3.2). The parks represented by these managers, in general, have extensive infrastructures—including roads, utility systems, recreational facilities, housing, and other structures—and high visitor use. For example, Yellowstone National Park, which reported a

$361-million shortfall, covers over 2.2 million acres of primarily wilderness terrain in northwest Wyoming and serves 2.2 million visitors per year. According to the Chief of Maintenance, it is similar in size to a large city, with responsibility for maintaining 423 miles of roads and 1,500 building structures including many historical landmarks. In addition, the park must operate and maintain water systems and sewage treatment plants, hundreds of campsites, and over 400 housing units to accommodate park visitors and employees.

Similarly, Gateway National Recreation Area, which reported a $44-million shortfall, encompasses 26,311 acres in the metropolitan area of New York Harbor and New Jersey. Gateway contains miles of walking and bike trails, extensive public beaches, and serves 8.8 million visitors per year. Where a remote park might have tasks such as operating and maintaining sewage treatment plants, urban parks such as Gateway, according to park officials, have different maintenance and operations problems such as vandalism, litter pickup, and trash removal. Trash removal alone costs the park over $1 million annually.

The Blue Ridge Parkway, in contrast, is composed primarily of 526 miles of road with few associated buildings or structures. Most of the reported $36-million shortfall for this park unit is in capital improvements for road work.

Table 3.2: Nearly Three Quarters of Maintenance Funding Shortfall Reported by 20 Park Managers[a]

(Dollars in millions)

Park or recreation area	Region	Reported shortfall
Yellowstone	Rocky Mountain	$361.1
Greenbelt	National Capital	119.2
Glacier	Rocky Mountain	83.0
Grand Teton	Rocky Mountain	80.4
Yosemite	Western	76.0
Delaware Water Gap	Mid-Atlantic	75.9
National Capital-Central	National Capital	75.3
Maritime Museum	Western	62.6
Golden Gate	Western	60.2
Shenandoah	Mid-Atlantic	59.4
Lake Mead	Western	50.8
Gateway	North Atlantic	44.0
Kings Canyon	Western	35.7
Blue Ridge Parkway	Southeastern	35.7
Big Bend	Southwestern	31.5
Grand Canyon	Western	30.9
Mesa Verde	Rocky Mountain	30.5
National Capital-East	National Capital	30.0
Olympic	Pacific Northwest	29.1
Mount Rainier	Pacific Northwest	28.1
Total		**$1,399.4**

[a]The Maritime Museum is part of the Golden Gate National Recreation Area and not identified by the National Park Service as a separate park unit. However, the Golden Gate National Recreation Area officials responding to our questionnaire reported the museum as a separate unit because of the magnitude of maintenance needs identified for the museum.

While these 20 park unit managers account for the majority of the shortfall reported, the percentage difference between what they said they need and what they received is very similar to the percentage reported by the other park managers. Both the managers of the 20 large parks and the other park managers reported, on average, a shortfall of about 25 percent in operational maintenance, 77 percent in cyclic maintenance, and 94 percent in capital improvements.

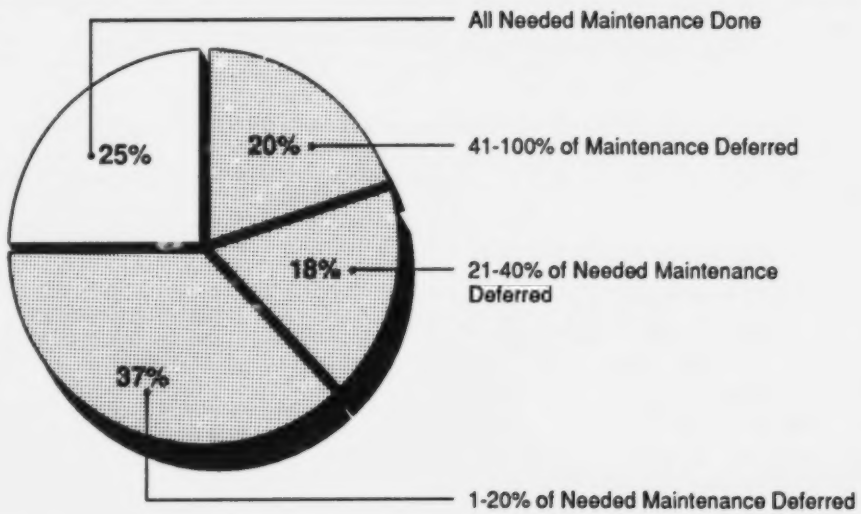
Not all park unit managers reported shortfalls in maintenance funding. Some believed that funding was adequate to address identified maintenance needs. Specifically, 63 park unit managers reported that their fiscal year 1987 base level funding fully met their identified need. Similarly, 59 park units reported sufficient cyclic funding for fiscal year 1987. For the same year, 96 unit managers reported that they either had

no capital improvement needs or that funding fully met their needs. On the other hand, only 24 park unit managers responding reported they did not have a shortfall in any category.

Funding Shortfalls Are Resulting in Maintenance Deferrals and Asset Deterioration

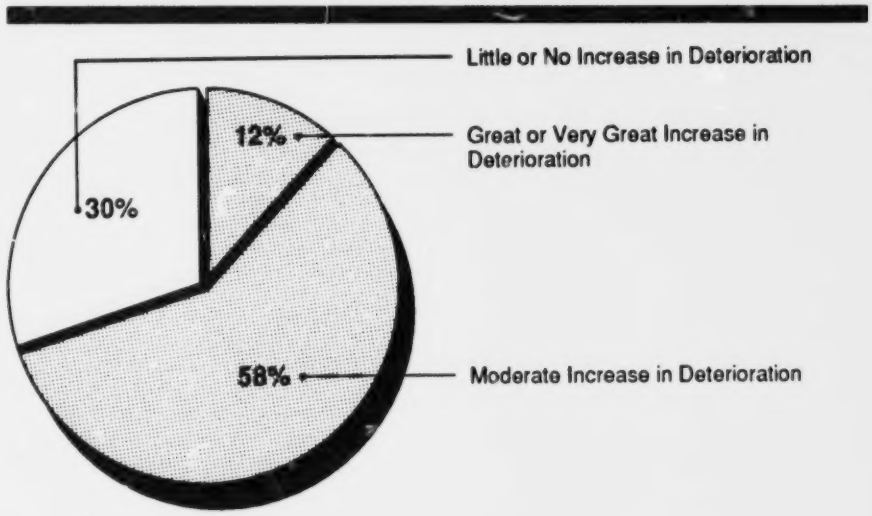
Most of the park unit managers responding to the questionnaire reported having to defer maintenance work on the basis of current funding levels. Specifically, for fiscal year 1987, about 20 percent of the park managers who responded reported having to defer between 41 and 100 percent of needed maintenance, and 18 percent reported having to defer between 21 and 40 percent of needed maintenance (see fig. 3.1). Thirty-seven percent reported only minor deferrals, while 25 percent reported no deferrals.

Figure 3.1: Seventy-Five Percent of Park Unit Managers Reported Varying Levels of Maintenance Deferrals Due to Funding Shortfalls



The greatest impact of these deferrals, as reported by the park unit managers, is asset deterioration. Twelve percent reported that unmet maintenance needs in fiscal years 1986 and 1987 had resulted in a great or very great increase in asset deterioration while 58 percent reported a moderate increase in asset deterioration (see fig. 3.2). In contrast, 30 percent reported little or no increase in deterioration.

Figure 3.2: Seventy Percent of Park Unit Managers Reported, at Least, Moderate Increases in Asset Deterioration Due to Funding Shortfalls



Not all assets have been affected equally. The assets that have been most affected by the maintenance deferrals are roads, trails, and buildings. According to the Deputy Superintendent at Gateway National Recreation Area, maintenance funding decreases have forced park management to change maintenance priorities and make trade-offs on what is maintained. For example, he said that Gateway management made a conscious decision in fiscal year 1986 to emphasize maintaining safe and clean recreation facilities at the expense of trying to stabilize seriously deteriorated buildings. This decision was made after park managers realized that funding was simply not adequate to repair and maintain all park assets and maintain heavily used visitor facilities at a safe and clean level. According to the Deputy, since 1982, 91 tort claims have been filed by injured park visitors with settlements and judgments totaling over $1.3 million.

He was not alone in his views. Another park manager said that in making maintenance decisions, he decides which assets will have the least effect on the visitor if not maintained. Outback trails, for example, are not maintained as well or as often as other trails because fewer people use them. He acknowledged that all maintenance should be done but said that the current levels of funding are not sufficient to do so.

Several other park managers reported that because of funding shortfalls, their current maintenance management programs were "crisis" oriented. To illustrate, one park manager described his situation as follows:

"The 'fat' in the maintenance division . . . has been 'trimmed away' long before now. Inadequate funds for personnel and supplies has resulted in decreased routine and preventative maintenance to facilities. Rapid deterioration and increased cyclic maintenance frequency has resulted. . . . These factors along with others create a 'brush-fire' maintenance division. Routine maintenance, which can't be performed, results in 'emergency' repairs. At best, the manager and maintenance worker are forced to 'patch-it' temporarily. At worst, they must let it deteriorate and hope it will last until they either transfer or retire. If these 'emergencies' increase in number or last too long, then other maintenance workers are taken off of their duties. Projects are delayed, overall costs are increased, and quality of work is compromised."

The result of crisis-oriented maintenance such as this is that the parks react to maintenance problems rather than planning for and performing preventative maintenance.

Some Deferred Maintenance Is Health and Safety Related

NPS places a high priority on health and safety maintenance projects—maintenance projects related to health and safety take priority over other maintenance projects. Despite this priority, some of this maintenance has had to be deferred, according to the park managers that we surveyed. Specifically, 215 reported deferring some maintenance that was health and safety-related, and 58 park unit managers reported that all deferrals represented health and safety maintenance needs.

According to the survey respondents, trails, public buildings, roads, equipment, and utility systems were the assets for which health and safety maintenance was most commonly deferred (see table 3.3).

Table 3.3: Health and Safety-Related Maintenance Most Commonly Deferred Is for Trails, Public Buildings, Roads, Equipment, and Utility Systems

	Number of units responding	
Park asset	No deferrals for health and safety	Some or all deferrals for health and safety
Trails	125	142
Public buildings	144	123
Roads	146	121
Equipment	155	112
Utility systems	158	109
Historic buildings	169	98
Park grounds	170	97
Housing	172	95
Administrative buildings	181	86
Campgrounds	208	59

During our site visits, park managers showed us examples of some of these high priority deferrals. At the Everglades National Park, for example, park officials noted that deteriorated underground pipes are creating potential health threats. Recent tests of the water supply at one of the park's districts identified low-level traces of a toxic substance created by a reaction of chlorine and solid matter. According to the Chief of Maintenance, park personnel and funding over the years have not been adequate to provide the proper level of inspection and preventative maintenance to detect deteriorated lines and to replace them when needed. As a consequence, he told us, it seems now that the whole line system will have to be replaced at a much greater cost.

Deteriorated sewer lines in the same district have allowed infiltration of groundwater into the sewage system, resulting in the periodic overflow of untreated sewage, according to park documents. This is in direct violation of state and federal health regulations and will require a major overhaul of the entire system, according to the Chief of Maintenance. Funding for repair of the system has been approved as a priority project for fiscal year 1988. Again, the park Chief of Maintenance stated that inadequate maintenance funding and staffing over the years had prevented proper inspection and preventative maintenance of system components to prolong the useful life of the system.

Another example of deferred maintenance of high priority projects is at Golden Gate National Recreation Area, where deteriorated walkways pose tripping hazards to visitors and employees. Located within the San Francisco metropolitan area, most of these walkways are over 40 years

old, receive heavy year-round use, and provide the only access to popular visitor attractions. Large sections of walkway have settled, causing severe cracks and distortion of the surface. The result has been numerous tripping accidents. Specifically, within the past 6 years, 29 visitor injuries have resulted in almost $200,000 in tort claims against the park. According to the park Administrative Officer, this project has been a park priority for 4 years. However, not enough money has been available to repair the walkways.

Site Visits Document Asset Deterioration

We observed asset deterioration due to deferred maintenance at each of the park units we visited. We found that deterioration ranged from minor, such as unmowed grass and peeling paint, to near total loss, such as structures collapsing and trails closed to hikers. Figures 3.3 through 3.12 illustrate the types of deferred maintenance we observed.

At Yellowstone National Park, for example, one of the older seasonal employee quarters and an adjacent cabin were condemned by a park housing committee as unfit for occupancy in spring 1987 (see fig. 3.3). However, because of a lack of alternate quarters, seasonal road crews are housed in both cabins. According to the district foreman, inadequate staff and funding have prevented replacing or repairing the structures, and bringing them up to an acceptable standard with routine maintenance is not possible. As a result, some seasonal employees are required to live in hazardous conditions.

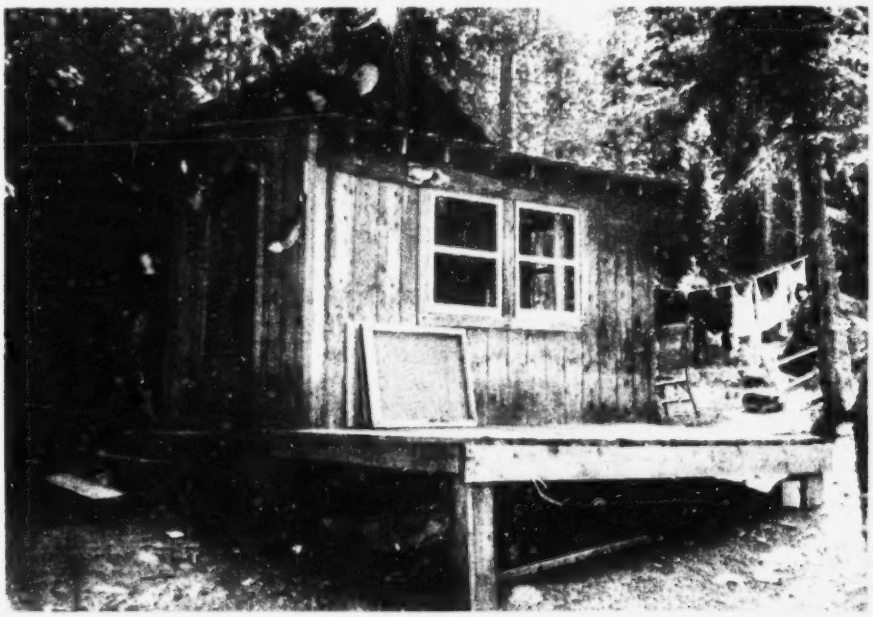


Figure 3.3: Deterioration of Employee Quarters at Yellowstone National Park, Wyoming

Another example of deferred maintenance is the parade ground on Alcatraz Island, Golden Gate National Recreation Area. The piles of rubble seen in figure 3.4 are the remains of employee quarters on the parade ground which were burned during the Native American Indian occupation in 1969-71. According to park officials, the cost of removing the debris is prohibitive, so current plans call for covering the debris with topsoil and landscaping the area. A lack of funds, however, has prevented restoration. In the meantime, the parade ground area has been closed to the public because of the fear that visitors to the park will be injured.

Figure 3.4: Debris Located on the Parade Ground at Alcatraz Island, Golden Gate National Recreation Area, California

As figure 3.5 illustrates, public restrooms in the Ocean Beach area of Golden Gate National Recreation Area have been severely defaced and many of the plumbing fixtures destroyed by vandals. According to park

officials, park maintenance staff lack the resources and time to keep up with the destruction. As a result, despite increasing beach usage, the general public is faced with unsafe and inadequate restroom facilities.

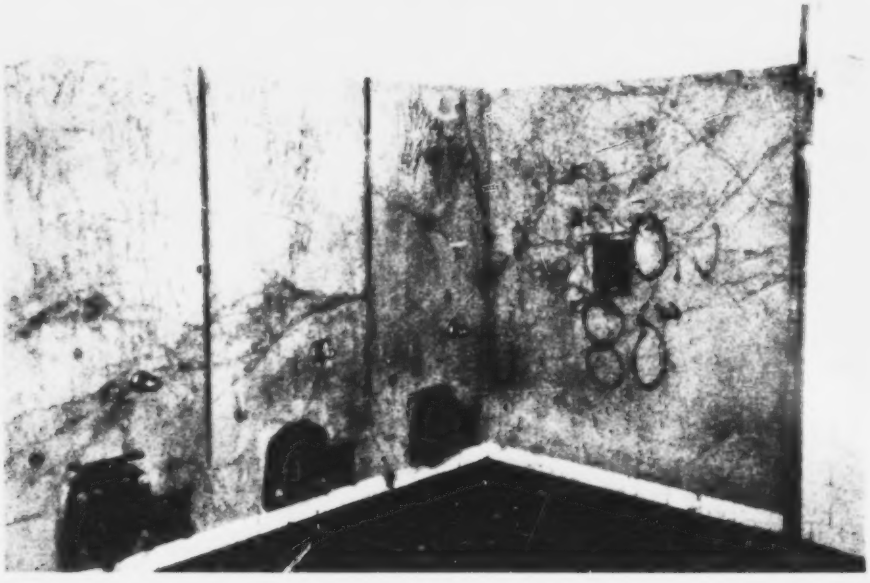


Figure 3.5: Defacement of a Public Restroom at Golden Gate National Recreation Area, California

Along the periphery of Canarsie Pier located in the Gateway National Recreation Area, sections of the sidewalk have uneven and pitted surfaces (see fig. 3.6). This problem is caused by erosion and deterioration of the surrounding seawall and pier supports. Efforts to patch, fill, and smooth the surfaces—all expensive efforts—have proven futile. The erosion action is constant, creating, over time, new holes and depressions. The significance of this is that the uneven surfaces and holes present a hazard to park visitors. Further, as park officials pointed out, maintenance dollars will continue to be spent on these "futile patching efforts" until the money is forthcoming to alleviate the source of the problem—repair of the pier at an estimated cost of $1.5 million.

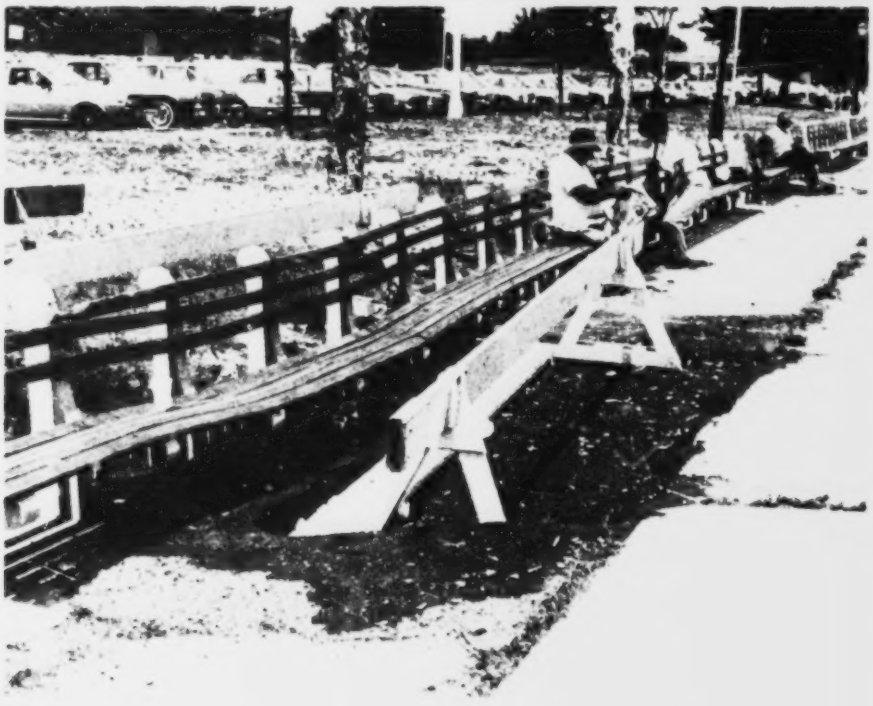


Figure 3.6: Uneven and Pitted Sidewalk Surface at Gateway National Recreation Area, New York

The Ryan Visitor Center, located in the Gateway National Recreation Area, is in a greatly deteriorated condition (see fig. 3.7). This former airstrip control tower was planned to house both interpretive services for the public and office space for park employees. The center was partially restored in 1981. Today, however, because of inadequate maintenance funding, the building is literally crumbling away. Water damage, caused by leaks in the ceiling and around the window sills, has resulted in collapsed ceilings and buckled walls. Because of the extensive deterioration, the park closed the building to visitors in 1987. The greatest fear of park officials, however, is that this building—a building with significant historic value—will be lost permanently.

Figure 3.7: Conditions Inside the Ryan Visitor Center, Gateway National Recreation Area, New York

Another example of deferred maintenance is at Fort Hancock, also located within the Gateway National Recreation Area. The building shown in figure 3.8, like most of the other Fort Hancock structures, is included on NPS' list of historically significant structures. As shown, the exterior porch of the building is collapsing. According to park officials, the building has received virtually no maintenance since Gateway became part of the Park Service in 1972; other maintenance activities have received priority. Because of the fear that falling debris could seriously injure a visitor or employee, park officials have closed the unsafe areas to public access. The consequences of not performing preventative maintenance can be great, as a comparison of the Fort Hancock structure in 1976 and 1987 illustrates (see figs. 3.8 and 3.9).

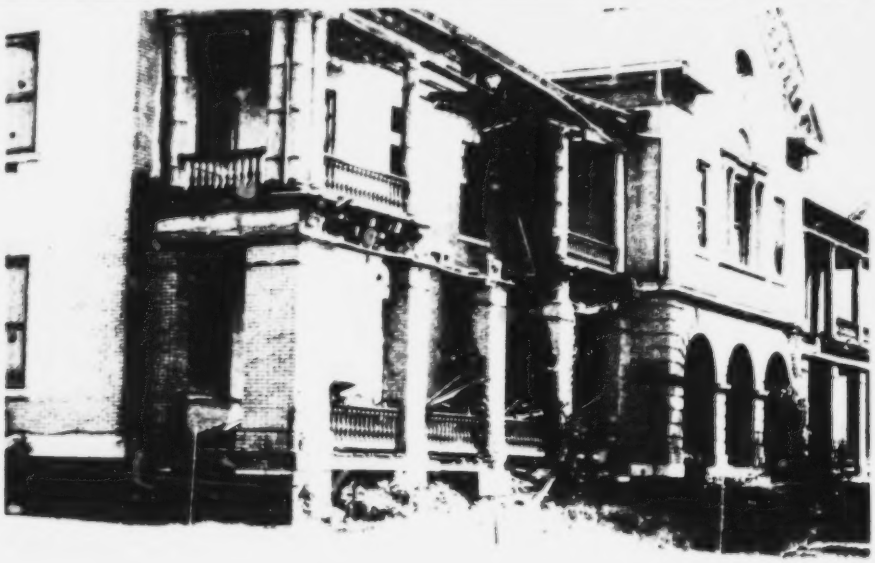


Figure 3.8: Condition of a Fort Hancock Historic Structure, Gateway National Recreation Area, New York, in 1987

Figure 3.9: Condition of the Same Structure in 1976

As figure 3.10 shows, a portion of the wall of Central Wharf, a wharf located within the Salem Maritime National Historic Site, has partially collapsed. Other sections of the wharf, although not collapsed, are deteriorated. According to park officials, the wharf's current condition is the culmination of 50 years of maintenance neglect. In 1983, park officials requested funding to institute a program of cyclic maintenance projects to save the wharf, as well as the other two wharfs located within the park. At the end of fiscal year 1987, this project had not been funded. In the meantime, as shown in figure 3.10, the holes created by the collapsed wall present a safety hazard to both park visitors and employees. More importantly, if repairs are not made to the wharf soon, park managers maintain, this asset may be lost permanently.

Figure 3.10: Collapsed Wall of Central Wharf, Salem Maritime National Historic Site, Massachusetts

Figure 3.11 shows a section of the canal flowing through Lowell National Historic Park. Vegetation, ranging from small weeds to large trees, is growing unchecked in joints between the granite blocks of the canal, resulting in a breakdown of the cement that holds the blocks

together. Portions of the canal walls have already failed. The park initiated a maintenance program to remove the vegetation in fiscal year 1982, but funding was discontinued in fiscal year 1984. According to park officials, neglect will eventually result in total collapse of the canal walls.

Figure 3.11: Vegetation Growing in Joints of Canal Wall, Lowell National Historic Park, Massachusetts

An example of one of the many pit toilets located in some campgrounds and picnic areas in Yosemite National Park is shown in figure 3.12. As their name implies, these primitive restrooms are built over holes in the ground. Many of the shelters are old and have deteriorated to the point

that they are no longer functional. In addition, some are located in high-use visitor areas where there is no room to dig new holes. Some pit toilets are located close to areas where leeching could create health problems. Because these structures demand a great deal of maintenance resources for upkeep and monitoring, park managers want to replace them with improved permanent facilities. However, inadequate funding has prevented their replacement.

Figure 3.12: Typical Pit Toilet Located in Yosemite National Park, California

Maintenance Staff Levels Are Not Adequate at Current Funding Levels

- Park unit managers reported a 35-percent shortfall in total maintenance staff for fiscal year 1987.
- Only 19 percent reported adequate staff levels in 1987 as compared to 40 percent in 1982.

Park Unit Managers Surveyed Reported a Shortfall in Maintenance Staffing

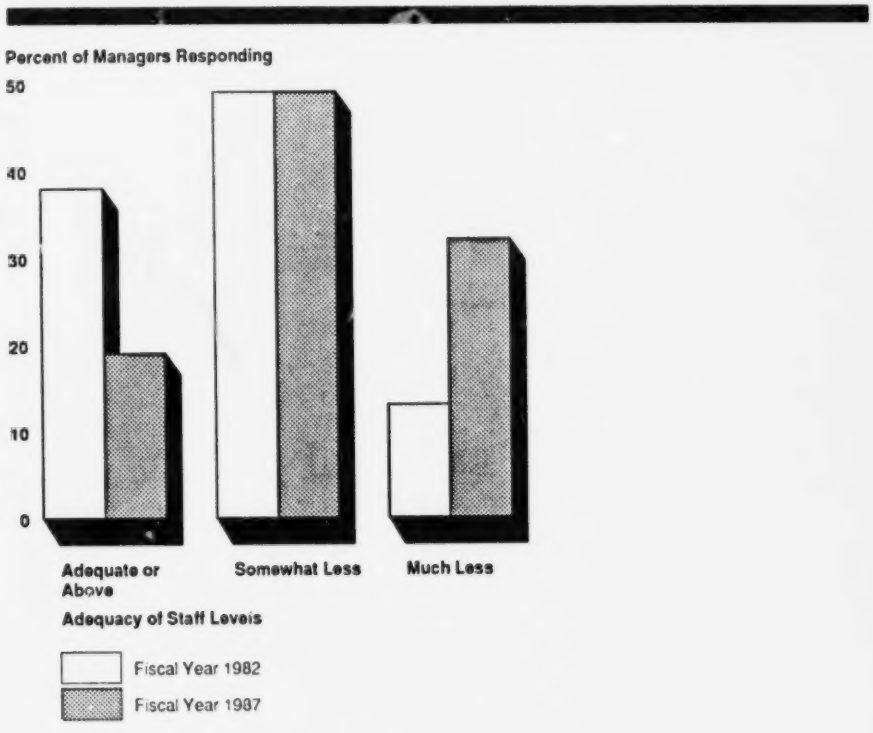
Park unit managers reported a shortfall in maintenance staff of 1,176 full-time equivalents, or a need of 35 percent more, in total, than their current fiscal year 1987 maintenance levels.[1] According to many park unit managers, at no time since 1982 had the number of maintenance staff been adequate to meet all routine base maintenance needs. At best (1982), only 40 percent of the parks reporting indicated that staffing met or exceeded needs.[2]

Park unit managers also reported a substantial decline in the adequacy of maintenance staff since fiscal year 1982 (see fig. 4.1). While 38 percent of those responding reported that the size of their maintenance staff was adequate or above adequate in fiscal year 1982, only 19 percent reported that the size of their maintenance staff was adequate or above in fiscal year 1987. By contrast, the number of parks reporting much less than adequate staff more than doubled from 13 percent in fiscal year 1982 to 32 percent in fiscal year 1987.

[1]Full-time equivalent employment is defined by the Office of Management and Budget as the number of hours worked divided by the number of compensable hours applicable to each fiscal year. For example, the hours worked by two part-time employees might be equivalent to the hours worked by one full-time employee.

[2]In our questionnaire, we asked park unit managers to report fiscal year 1987 maintenance division staffing levels, needed levels, and whether funded levels have increased, decreased, or remained the same since fiscal year 1982. Not all 267 park unit managers fully reported the levels of maintenance staffing needed for fiscal year 1987, as requested. Only 181 reported complete information, and the information presented here is based on their responses.

Figure 4.1: Adequacy of Maintenance Staff Levels Has Declined Since Fiscal Year 1982



During visits to park units, park managers told us that maintenance staff shortages have been a way of life for many years. At several units we visited, park managers reported that two factors have contributed greatly to maintenance staff problems. First, routine maintenance is the type of maintenance that can easily be postponed or reduced with little visible short-term effect, according to the managers. Delaying painting, deferring brush clearing along roads and trails, and rescheduling road work are examples of project deferrals that do not cause immediate damage to assets or threaten visitor safety. Consequently, when funding shortages occur, cutting back on staff needed to do easily deferred maintenance activities is often a common solution for park managers.

Second, some of the park managers from the sites blamed maintenance staffing problems on added maintenance activities and responsibilities without the benefit of corresponding staff increases. For example, according to some of these park managers, new federal or state regulatory requirements for detecting and monitoring hazardous materials

have substantially increased maintenance activities. Similarly, some park managers told us that more land, structures, and extended visitor seasons have been added to their units and that the additional maintenance activities have had to be absorbed internally. The effect of absorbing increased maintenance responsibilities internally is the equivalent of a staffing cut.

Park unit managers responding to our questionnaire reported that the primary impact of staffing shortfalls is accelerated asset deterioration. They also reported that park roads, trails, and buildings were suffering the greatest increase in deteriorated condition as a result of staffing shortages.

Some park unit managers have taken action to mediate the declining level of maintenance staffing by encouraging volunteer groups to help address the growing amount of deferred maintenance. At Everglades National Park, for example, we were told that volunteers and prison inmates have been used to clear brush from trails and to pick up trash. According to the maintenance managers, these groups have helped the park accomplish maintenance that might not have been performed otherwise.

Overall NPS Road Conditions Rated as Poor, and Funding Is Not Adequate to Prevent Further Decline

- Profile of the NPS road system:
  - Nearly 8,000 miles of road.
  - Seventy percent of the roads in 3 regions and more than 50 percent in just 15 parks.
- Fifty percent of roads rated in poor condition by FHWA.
- Fifty-eight percent of park unit managers reported a decline in the overall condition of the road system since 1982; FHWA studies agree.
- Funding not adequate to prevent further decline in condition.

Profile of the NPS Road System

The NPS road system encompasses roads, bridges, and tunnels. In addition to the 1,367 bridges and 60 tunnels in the 337 park units, 240 have roads—totaling 7,975 miles—that are maintained by NPS. These miles of roadway serve a variety of purposes. In many cases they are vital not only to conducting park operations but also to providing visitors with a full appreciation of the park unit's assets. For some roads, the main visitor experience is to drive along the roadway, enjoying the scenery. In other park units, the roads transport visitors to scenic, scientific, recreational, or cultural points of interests, such as overlooks, campgrounds, and monuments. The remaining 97 park units either do not have roads or their roads are maintained by the state, county, or city or another federal agency.

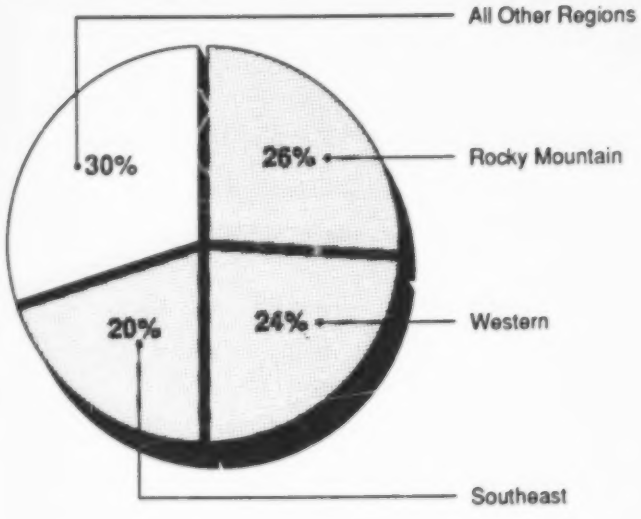
Both park road purpose and mileage vary from park to park. Some parks have less than 1 mile of road surface while others have hundreds of miles. Just over 50 percent of NPS road mileage is concentrated in 15 park units (see fig. 5.1). The Blue Ridge Parkway, with 526 miles, and the Natchez Trace Parkway, with 428 miles, are the two largest. The remaining 13 are, for the most part, large park units that have an extensive number of miles for providing visitors access into and within the park. Yellowstone, for example, with 423 miles of roadway, is one of these.

Table 5.1: Fifty Percent of NPS Roads Are in Just 15 Parks

Park	Region	Number of miles
Blue Ridge Parkway	Southeastern	526
Natchez Trace Parkway	Southeastern	428
Yellowstone	Rocky Mountain	423
Death Valley	Western	377
Big Bend	Southwestern	309
Glen Canyon	Rocky Mountain	245
Lake Mead	Western	244
Canyonlands	Rocky Mountain	241
Shenandoah	Mid-Atlantic	220
Great Smoky Mountains	Southeastern	216
Grand Teton	Rocky Mountain	196
Yosemite	Western	187
Grand Canyon	Western	178
Glacier	Rocky Mountain	169
Joshua Tree	Western	158
Total		**4,117**

Road mileage also varies between NPS regions. Just over 70 percent of the roadway mileage are located in the Rocky Mountain, Western, and Southeastern regions (see fig. 5.1). The Rocky Mountain region has the most roadway miles with 2,032, the Western region has 1,949, and the Southeast region has 1,630. The remaining seven regions have a total of 2,364 miles with the Alaska region having the smallest number of miles (127).

Figure 5.1: Seventy Percent of NPS Roads Are in Three Regions



NPS Road Conditions Have Declined

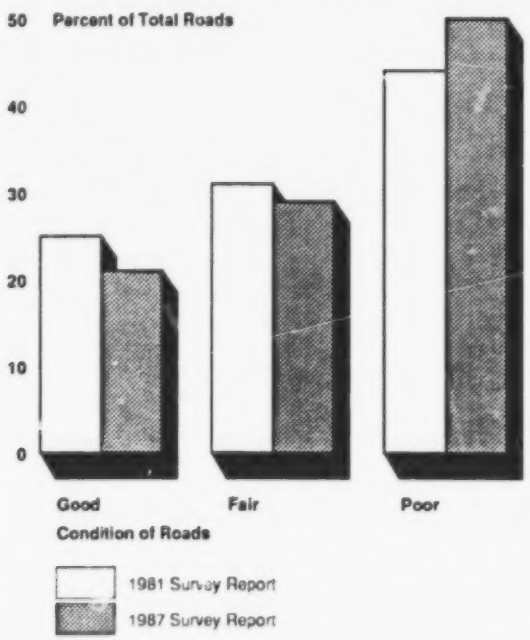
The Surface Transportation Assistance Act of 1982 established the Federal Lands Highway Program for the construction and rehabilitation of federal agency roads, including park roads and parkways. In accordance with that program, NPS has a mandate to construct, operate, and maintain park roads to safe and acceptable standards. Consistent with its mandate, the NPS has initiated a multiyear program for addressing the needs of its park roadway system. Under a mutual agreement between FHWA and NPS, FHWA is responsible for assessing the condition of NPS roads, bridges, and tunnels, as well as maintaining and updating inventories of them.

FHWA compiled an initial assessment of park road, bridge, and tunnel conditions between 1978 and 1981. During this period, FHWA engineers physically inspected all of the structures. They recorded and measured

roadway distances, developed a photolog of roadway sections, and evaluated roadway, bridge, and tunnel surfaces, bases, and safety features against condition standards. FHWA issued the findings of this inspection in 1981. FHWA conducted another inspection of Park Service roads, bridges, and tunnels between 1983 and 1986 and issued an updated draft report in 1987.

A comparison of the two FHWA reports indicates that the overall condition of the NPS roadway system has deteriorated since 1981 (see fig. 5.2). Specifically, the 1987 report states that the current overall combined rating of NPS' nearly 8,000 miles of paved and unpaved roadway is 50 percent poor, 29 percent fair, and 21 percent good, whereas in 1981 road condition was 44 percent poor, 31 percent fair, and 25 percent good.

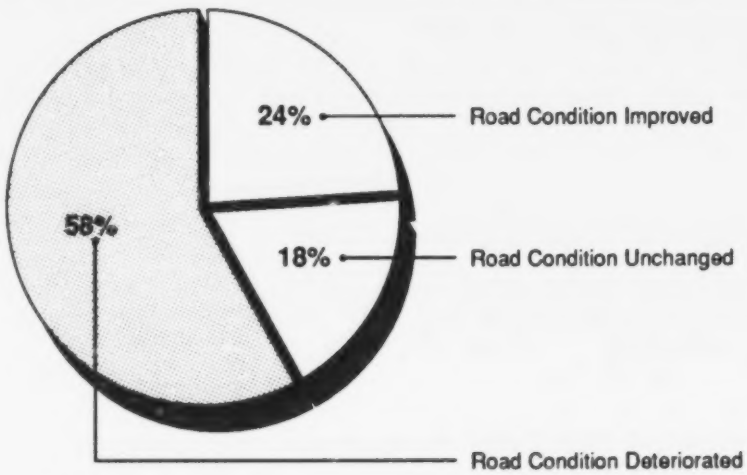
Figure 5.2: FHWA Studies Show a Decline in NPS Road Condition From 1981-87



The responses we received from our questionnaire support the FHWA study results. We asked the park unit managers whether they thought

the overall condition of their roads had deteriorated, remained the same, or improved since the beginning of fiscal year 1982. Slightly over half (58 percent) of the park unit managers responding who had roads reported that road conditions had declined (see fig. 5.3). Only 18 percent said road conditions were unchanged, and 24 percent said they had improved.

Figure 5.3: Fifty-Eight Percent of Park Unit Managers Reported a Decline in Road Condition Since 1982



The condition of bridges and tunnels, on the other hand, has improved since 1981. In 1987, 104 fewer structures were rated by FHWA as critically deficient and requiring replacement or reduced load limits than in its 1981 study. Still, 117, or roughly 8 percent, of the 1,427 bridge and tunnel structures in the NPS inventory were classified as deficient. According to FHWA data, 99 of these structures require more frequent inspections but pose no immediate danger if restricted use is adhered to.

Road Funding Reported as Inadequate

Parks receive two primary sources of funding to maintain and repair roads within their parks. The NPS park base and cyclic budgets provide for day-to-day maintenance and minor repair of roads (such as cleaning roadside ditches, culverts, and drainages; removing snow; and patching potholes) and for larger periodic road projects (beyond the scope of routine road maintenance). Larger reconstruction and repair projects, which generally require extensive preplanning efforts and several years

to accomplish, are funded through the Federal Lands Highway Program, a program administered by FHWA.[1]

Over half of the park managers responding reported that the current level of maintenance funding from NPS budget sources is not sufficient for improving the condition of park roads. Specifically, we asked park managers whether the amount of maintenance their park had been able to perform under fiscal year 1987 funding had enabled their park to improve or maintain the condition of its roads or had allowed roads to deteriorate. Of those park unit managers responding to this question that had roads, 58 percent reported that the amount of maintenance that they were able to perform under fiscal year 1987 funding had allowed deteriorating road conditions. Twenty-nine percent of park managers reported that they had been able to maintain current road conditions. Only 13 percent reported road conditions had improved, given current funding levels.

In addition to NPS base and cyclic budgets, other funds are authorized by the Surface Transportation Assistance Act of 1982 (P. L. 97-424), which established the Federal Lands Highways Program. This program provides an annual reconstruction and construction road budget for the NPS. Between fiscal years 1983 and 1986, $375 million, or approximately $75 million per year, was appropriated for reconstruction and construction of NPS roads. In fiscal year 1987, the Congress extended the Federal Lands Highway Program and authorized an NPS budget of $60 million per year for the next 5 years.

Even though $375 million was committed to NPS road projects between 1983 and 1986, according to FHWA, park road conditions declined during that time with approximately 570 more miles of road being added to the list of roads in the poorest condition. FHWA estimates that the current backlog of road, bridge, and tunnel needs are $1.7 billion and that at the current level of funding—$60 million per year for 5 years—continued road deterioration can be expected. Specifically, FHWA estimates that at $60 million annually, it would take 33 years to complete the current $1.7 billion backlog needs for the entire park road system. At this rate, because roads have an expected pavement life of 15 to 20 years, the

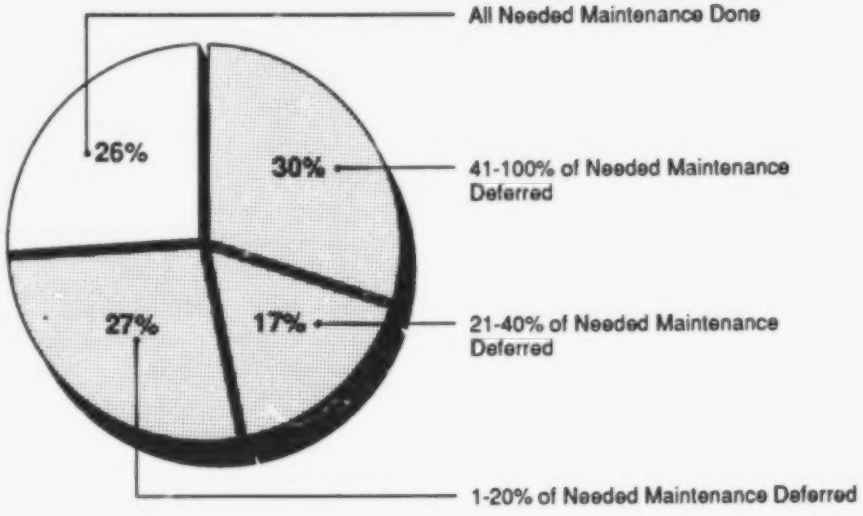
[1]The Federal Lands Highway Program also includes funding for new road construction. While neither the larger reconstruction/repair projects nor new road construction projects are "maintenance" activities, per se, they have a great impact on the overall condition of the road system. Consequently, as agreed with the requester's office, we included funding for these projects in our assessment of funding adequacy for NPS roadways.

FHWA estimates that a complete new cycle of rehabilitation and reconstruction will be needed midway through this period. Thus, in 20 years, major repair work would be needed on roads improved during this cycle while, at the same time, at least one-third of the projects currently represented in the original $1.7 billion backlog would still be backlogged.

Roads Are Deteriorating Because of Insufficient Funding

Most park managers responding to our questionnaire—almost three-fourths—anticipated having to defer road maintenance work based on their fiscal year 1987 funding level (see fig. 5.4). Thirty percent reported that they would have to defer between 41 and 100 percent of needed maintenance work. About 17 percent reported that they would have to defer between 21 and 40 percent, and 27 percent reported that they would have to defer from 1 to 20 percent of needed road maintenance work. The remaining 26 percent reported that all maintenance work could be performed at the fiscal 1987 funding level.

Figure 5.4: Seventy-Four Percent of Park Unit Managers Reported Road Maintenance Deferrals Because of Funding Shortfalls



Moreover, some park managers reported that they have had to curtail road activity because of deteriorating road conditions. Specifically, 21 park managers reported that they have had to impose load limits; 37 said that they have restricted traffic; and 19 reported that the deteriorating road conditions have caused them to close some of their roads.

Site Visits Document Road Deterioration

We observed road deterioration during our visits to selected park units. Deterioration ranged from minor, such as road shoulder mowing, to major, such as cracks and holes in the road surface. Figures 5.5 to 5.12 illustrate the types of deterioration we observed.

As figure 5.5 illustrates, the road surface leading to Mariposa Grove at Yosemite National Park has many patched sections to cover cracks and holes. However, as shown, the patch work is uneven and does not cover all the cracks in the roadway. According to a park maintenance official, funding to adequately perform the periodic maintenance necessary to prolong the useful life of road surfaces has not been available. More often, road maintenance is limited to patching the worst roads to provide visitors with a safer access to popular attractions. According to this park official, this roadway section is in better condition than some of the campground and secondary roads that park visitors use.

Figure 5.5: Example of Road Surface Deferred Maintenance at Yosemite National Park, California

Figure 5.6 illustrates the conditions along the side of the same roadway. As shown, brush and trees are encroaching on the roadway. As a result, vegetation and tree roots growing under the road surface are causing damage to the edge of the roadway. In addition, tree limbs overhanging

the roadway impair motorists' line of sight vision, especially on curves. Combined, these conditions cause unsafe driving conditions. According to a park maintenance official, they have been requesting cyclic money for roadside brush removal for 6 or 7 years. Over this period, funding has not been received, and no brush removal has been performed.

Figure 5.6: Example of Roadside Maintenance at Yosemite National Park, California

Figure 5.7 is another illustration of deteriorated road condition caused by deferred maintenance. Figure 5.7 shows a stretch of road near the Norris Geyser Basin, Yellowstone National Park, that has severe cracking and some material breakdown across the entire surface. Surface

material deterioration is clearly visible along the edge of the roadway. Overall, this section of road provides a very rough and uneven ride for park visitors.

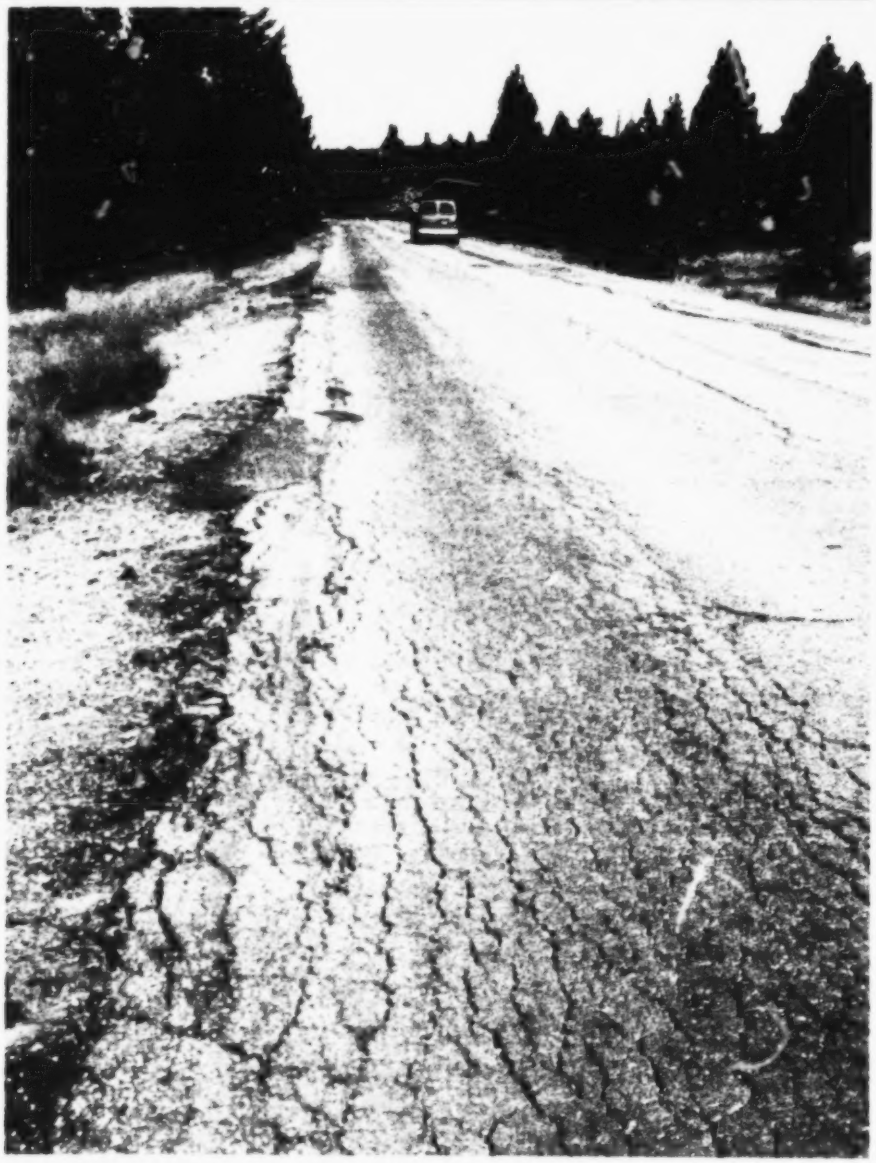


Figure 5.7: Example of Road Surface Deterioration at Yellowstone National Park, Wyoming

Figure 5.8 illustrates another example of deferred road maintenance in Yellowstone National Park. A crack, approximately 6 to 8 inches wide and about 3 to 5 inches deep, runs for several hundred yards down the middle of the northbound lane. Because of other road maintenance priorities, road crews have not repaired this surface.

Figure 5.8: Cracks in Road Surface at Yellowstone National Park, Wyoming

Figure 5 9 shows a raised wave of asphalt in the center of a Yellowstone National Park road. We were advised by park managers that the wave is caused by the pressure of vehicles passing over soft road base material. Further, according to a park manager, these waves are not uncommon

and are sometimes high enough to scrape the undercarriage of passing vehicles.

Figure 5.9: Raised Wave of Asphalt in the Center of a Yellowstone National Park Road, Wyoming

Deferred maintenance is not the sole cause of road deterioration. Most of Yellowstone's roads, according to park management, have not received the proper structural base buildup to support the heavier vehicles that currently travel in the parks. According to FHWA and park officials, many of the road miles classified as in poor condition can be attributed to this deteriorating base structure. However, regardless of the underlying cause, some maintenance is needed to keep the roads from rapidly deteriorating. We were told by park officials that maintenance funding was not adequate for them to periodically seal cracks or place an overlay of asphalt on worn surfaces to help extend the useful life of the road. According to these officials, road crews have been reduced at Yellowstone over the past 10 years because of budget reductions, while at the same time roads have been deteriorating. As a result, some roads are in extremely poor condition, and according to the park safety officer, some present unsafe driving conditions to park visitors.

Road surface and base structure conditions are not the only problem with roadways in Yellowstone. The park budget and reduced staffing levels have also made it difficult to attend to road shoulder, ditch, and other roadside maintenance. Figure 5.10 is an example of the condition of many of the drainage ditches in Yellowstone. As shown, ditches are filled with vegetation and small trees that block drainage flow. According to park maintenance personnel, ditch clearing has not been performed on a regular basis for the last 10 years because of reduced budget and staff. Clogged ditches result in pooling of water along the shoulder area that can cause the shoulder area to become soft or erode and can allow the base material under the road surface to become saturated, causing structural degradation.

Figure 5.10: Example of the Condition of Drainage Ditches at Yellowstone National Park, Wyoming

An example of the roadway shoulder conditions along the section of roadway from Grant to the South entrance of Yellowstone National Park is shown in figure 5.11. The roadway, which was repaired 3 years ago, has severe drop-offs at the pavement edge, caused by erosion of the shoulder material. As a result, motorists driving near the roadway edge

are in danger of driving off the roadway and losing control of their vehicles. In addition, figure 5.11 shows the scars in the roadway made by the axles of vehicles that have gone off the side of the roadway. According to park officials, limited funding has made it virtually impossible to purchase adequate road material, obtain proper equipment, or fund the staff needed to properly maintain the shoulders.

Figure 5.11: Example of Roadway Shoulder Conditions in Yellowstone National Park, Wyoming

Figure 5.12 shows the parking lot at the Boat Bay Campground in the Lake District of Yellowstone National Park. Logs were placed along the campground parking lot to direct traffic and to prevent vehicles from running off the roadway. As shown, the logs are covered by vegetation and cannot easily be seen. According to park officials, because they lack adequate maintenance staff, they are not performing any roadside mowing or shoulder clearing. As a result of deferring roadside cleanup at this parking lot, motorists are damaging their cars by either running into or over the logs.

Figure 5.12: Parking Lot at the Boat Bay Campground, Yellowstone National Park, Wyoming

It Is Too Early to Assess MMS' Effectiveness

- The Congress mandated the implementation of an NPS servicewide maintenance management system following a GAO recommendation to do so.
- Important elements of a maintenance management system are
  - workload inventory of assets,
  - maintenance tasks,
  - work standards,
  - work program and performance budget,
  - work schedules,
  - work orders, and
  - reports.
- Since the Maintenance Management System (MMS) is just now being implemented, it is too early to assess its ability to identify, report, and address NPS maintenance needs.
- Park managers from other park systems with similar maintenance management programs cite beneficial results.

An NPS Maintenance Management System Was Mandated by the Congress

In June 1984, we issued a report entitled National Park Service Needs a Maintenance Management System (GAO/RCED-84-107, June 1, 1984) in which we recommended that NPS design, test, and implement a maintenance management system and provide appropriate policy, guidance, and personnel training. This recommendation was based on our finding that NPS did not have a systematic servicewide approach for planning, organizing, directing, and reviewing its maintenance activities and, therefore, could not ensure that its assets received needed upkeep and that park maintenance activities were efficient. Following this report, the Congress mandated implementation of a servicewide system for managing NPS maintenance (P. L. 98-540).

In June 1986 a contract was awarded to an engineering firm to design and implement a servicewide maintenance management system. Between July 1986 and April 1987, NPS worked closely with the contractor to develop a system specifically adapted to meet the needs of the NPS. As such, the intent of the system was and is to provide all park areas with a consistent approach to maintenance management regardless of park area size or work responsibilities.

Installation and implementation of NPS' MMS began in July 1987 and by the end of September 1987 the system had been installed, but not fully implemented, in about 75 park units. NPS estimates that full implementation will be completed by December 1989.

Important Elements of a Maintenance Management System

In our 1984 report, we stated that a maintenance management system should include seven key elements that are needed to help provide park managers with the necessary information and tools to plan, organize, direct, and review maintenance activities. These elements are described in table 6.1.

Table 6.1: Summary of Maintenance Management System Key Elements

Management principles	Maintenance management system elements	Description of elements
Planning and organizing	Workload inventory of assets	Detailed information that quantifies, for all assets (buildings, roads, utility systems, grounds, etc.) that must be maintained, the characteristics affecting the type of maintenance work performed. For example, square feet of interior painted wall, feet of 12" storm drain, or miles of paved road.
	Maintenance tasks	A set of tasks that describe the maintenance work in the park.
	Work standards	Frequency of maintenance; measurable quality standard to which assets should be maintained; methods for accomplishing work; required labor, equipment, and material resources; and expected worker production for each maintenance task.
	Work program and performance budget	Annual work plan identifying maintenance needs (calculated by using inventory, tasks, and standards) and financial resources to be devoted to each maintenance task.
Directing	Work schedules	A plan that identifies and prioritizes tasks to be done in a specific time period (generally biweekly) and specifies required labor resources.
	Work orders	Specific job authorization and record of work accomplished. They can be used to record actual labor and material costs.
Reviewing	Reports	Reports and special analyses that compare planned versus actual accomplishments and costs. They are used to evaluate maintenance operations.

On the basis of our review of NPS' MMS documentation and discussions with NPS officials, it appears that the system design includes each of these elements. With respect to work planning, for example, the MMS design provides park managers a means to prepare a park maintenance program. This planning process requires park managers to define work activities to be performed, inventory and evaluate the condition of park physical features, determine the amount of work required to meet maintenance objectives, and estimate resources and materials required for each activity. Armed with this information, park managers can prepare work programs and budgets that summarize the type and amount of work desired, as well as planned.

Second, the MMS work-organizing procedures provide ways for park managers to distribute the maintenance workload to fit seasonal needs and resource availability. Specifically, this process requires park managers to prepare work calendars and define labor, equipment, and materials required to accomplish the annual and monthly plans. These tools

should help park managers to develop strategies for staffing needs, distribute workload evenly over the seasons, and estimate resource requirements.

Third, the MMS work-directing function provides park managers with a means for developing work schedules and assignments for park maintenance staff. This process includes identifying and documenting work needs, preparing short-term work schedules, and assigning work to the maintenance staff. These procedures should, if implemented properly, assist park managers and supervisors to organize and use their assigned resources in the best way to accomplish work program objectives.

Finally, the MMS work-controlling function provides procedures for collecting and reporting work progress data, and evaluating work performance and program cost. Report data generated in this function can be used by park managers and supervisors to analyze and evaluate maintenance work efforts in their respective park areas and to update or modify the current or future program plans.

Since MMS Is Just Now Being Implemented, It Is Too Early to Assess Its Effectiveness

As pointed out previously, MMS has been installed in 75 parks, but it is not fully operational in any. As a result, we could not assess whether the system will accomplish its objectives. However, on the basis of its current design, MMS should enable park managers to better plan, organize, direct, and review needed maintenance work.

As noted, MMS will permit park managers to develop a work program and budget that specifies the type of work and the total estimated cost of maintaining their asset inventory at a desired level. Assuming that all parks follow this approach, NPS should be able to document and report total annual funding needed to maintain park assets. Parks will also be able to use the system to identify and report work that cannot be conducted if adequate funding is not received and adjust maintenance work activity to meet budgetary limits or unexpected changes in resource availability.

Comments from park officials at two sites we visited where MMS is currently being installed support the idea that MMS will enable the park units to better plan, organize, direct, and review needed maintenance work. They are generally optimistic that the system will work. However, officials at both parks were concerned that the system will not ensure

adequate maintenance funding, leaving the parks to face the same situation that they currently face, that is, having to defer maintenance and allowing assets to deteriorate in times of funding shortages.

These park officials also expressed some concern about the adequacy of current maintenance staffing to adequately provide support for the implementation and operation of MMS. As pointed out in our 1984 report, such a system needs adequate personnel, funding, and training to ensure successful implementation and operation. However, the limited experience with the system is not sufficient for us to assess personnel, funding, and training adequacy.

Other Park Systems With Similar Systems Cite Beneficial Results

In 1984, we visited three park organizations that had implemented a maintenance management system and had reported substantial benefits—Parks Canada, Tampa Parks Department, and the Seattle Department of Parks and Recreation.

During this review, we interviewed officials from these organizations to discuss the benefits that each system has achieved. All three park organizations reported that their maintenance management systems have provided park managers with the tools to achieve maintenance program objectives more efficiently and effectively.

For example, Parks Canada officials at the headquarters, regional, and park level praised the system and listed benefits that include establishing a proper and consistent basis for budgeting and identifying resource needs, reducing emergency maintenance calls (due to a systematic preventative maintenance program), reducing maintenance staff idle time by providing biweekly work plan schedules, and providing a means for comparing actual accomplishments against planned work. These reported benefits have not, however, been quantified.

According to a Parks Canada regional official, one of the biggest benefits of the system is that it has helped to identify and document staffing shortfalls in the park system. In 1983, faced with proposed budget staff reductions, Parks Canada's maintenance budget was increased by 85 staff based on the strength of maintenance system documentation. In the current budget consideration for 1989, park officials have once again been given the opportunity to petition for staff increases based on identified need.

Similarly, a responsible Tampa Parks Department official told us that their maintenance management system has also provided numerous benefits and improvements in park operations. The department's management analyst said that the primary benefits include providing a means for identifying all assets that need maintenance, balancing the maintenance workload, developing detailed work plans for foremen and park laborers to use in scheduling work, and developing reports to measure progress against the plan.

While the Tampa Parks Department has not attempted to formally quantify some of the benefits derived from the system, park officials told us that the system has helped improve productivity and efficiency of operations. Since 1982, the first year of the department's maintenance management system, its maintenance positions have declined from 321 to 275 because of several years of budget cuts. However, according to park officials, these cuts have not had a significant negative impact on maintenance operations. The reason, they said, is because of increased efficiencies resulting from the system. Specifically, detailed work schedules generated by the system have helped them to develop more efficient plans for accomplishing maintenance work. Guided by the schedules, some park tasks are now performed equally well, if not better than before—with only 60 percent of the original crew.

At the Seattle Department of Parks and Recreation, officials reported that a major benefit of their maintenance management system has been its ability to generate and document total maintenance funding needs for the budget process. Other benefits cited include a reduction in the number of system breakdowns due to a preventative maintenance program, better scheduling and planning of maintenance work, and the ability to evaluate maintenance operations and use that information to improve maintenance efficiency.

GAO Observations

- Extensive funding shortfalls may be leading to the need for another major influx of money to repair deteriorated assets.
- Without adequate funding, some assets may be lost permanently.

Observations

Maintenance of NPS assets is not a simple issue—the assets are diverse, the needs great, and the dollars to maintain these assets scarce. Further, concerns about and efforts toward maintaining park assets are not new. Within NPS, for example, at least three major influxes of money, in addition to the regular maintenance dollars, have occurred to address park maintenance deficiencies during the last 35 years.[1] The Park Restoration and Improvement Program (PRIP), the most recent of these special programs, was a $1.1-billion effort from 1982 through 1985, whose purpose was to remedy the continuing deterioration of visitor-use facilities within the park system and to strengthen NPS' maintenance and resource management programs. Following PRIP, the Director of NPS testified before the Congress that the program had been successful in reducing the backlog of critical health and safety-related maintenance deficiencies. Money for this program ended, however, and another "special emphasis" maintenance program has not been approved since that time.

The question that arises is "Will there be a need for another PRIP-type program?" While we do not know with certainty what the answer is, it appears that the extensive shortfalls in maintenance funding may be leading to the need for another major influx of money to repair deteriorated assets and to address maintenance deferrals in the not too distant future. As noted earlier, most park unit managers reported a shortfall in annual funds to support identified maintenance needs. Without adequate maintenance funds, parks have been forced to defer maintenance—a fact confirmed during our site visits to selected park units. This choice contributes to inadequate levels of maintenance, results in the deterioration of park assets, and adds to the growing backlog of deferred maintenance projects.

If park conditions are to be prevented from returning to the conditions that led to PRIP, then the maintenance funding shortfall will have to be narrowed. We recognize, however, that no simple solution exists for the problem of ensuring maintenance funding adequacy. One way to narrow the maintenance funding shortfall is through increased funding—an option that may not be feasible given the current budget constraints being faced governmentwide. Alternative sources of funding, such as donations and user fees, and the use of volunteers and cooperative agreements may also be options for narrowing the maintenance funding shortfall. However, we are aware that the feasibility and practicality of

[1] "Mission 66," a 1956-66 program to upgrade park visitor centers and employee housing; the Bicentennial Program, a special program to improve facilities at several parks designated for public celebration during the 1976 Bicentennial year; and the Park Restoration and Improvement Program, a program conducted from 1982-85 to remedy park asset deterioration.

using these options have limits. For example, laws currently limit the use of user fees in certain park units and, in remote parks, the use of volunteer forces may not be feasible.

MMS, through increased maintenance resource efficiency and effectiveness, should also help to narrow the shortfall. More importantly, it should provide managers with a better tool to use in assigning current NPS priorities to maintenance activities. For example, using information generated from MMS, park unit managers should be able to more quickly identify health and safety-related maintenance—a high priority—and ensure that the essential work needed to eliminate the health and safety threat is performed. The effective use of this maintenance management tool becomes particularly crucial in times of budgetary constraints, when managers need to maximize the effective use of available resources.

The extent to which MMS will mitigate the effects of funding shortfalls through increased efficiency and effectiveness will not be known until the system is fully implemented. Its impact, however, will probably be limited since the funding shortfall is so much greater than available funding—a $2.2-billion reported need in fiscal year 1987 as compared to available funding of $308 million.

Difficult as these problems may be, until a solution is reached servicewide, then the backlog of deferred maintenance projects will more than likely continue to grow and assets will continue to deteriorate. At risk, however, as pointed out by some park unit managers, is that because of advanced, continuing deterioration, some of these assets may be lost permanently.

Copy of Questionnaire Sent to Each of the 337 Park Units

U.S. General Accounting Office

SURVEY ON MAINTENANCE OF THE NATIONAL PARKS

The U.S. General Accounting Office, an agency that assists Congress in reviewing federal programs, is conducting a review of the maintenance needs of the national parks. The purpose of this review is to examine the funding of park maintenance and its impact on park operations and safety. To ensure that our data is as complete as possible, we are asking each park to report current maintenance funding and describe the impact of deferred maintenance.

If you are responsible for maintenance at more than one park you will receive more than one copy of the questionnaire. Only complete more than one questionnaire if you receive and manage a separate maintenance budget for each park.

Please complete this survey and return it within 10 days of receipt, if possible, using the enclosed business reply envelope. If you have any questions concerning this survey, please contact Sterling Leibenguth or Kevin Perkins at FTS 399-5356 or commercial (206)442-5356. If the return envelope is missing or misplaced please return the questionnaire to:

U.S. General Accounting Office
Attn. Sterling Leibenguth, Room 4476
441 G St., N.W.
Washington, D.C. 20548

Thank you for your assistance.

Mailing address: (please make any necessary corrections)

ID (1-3)
CD1 (4)

(attach copy of mailing label here)

___ QUESTIONNAIRES RETURNED

Person completing survey:

Name:_____

Title:_____

Telephone number:_____
(Area code)

Park Superintendent:

Name:_____

Telephone number:_____
(Area code)

Today's Date: ___/___/___
Mo. Day Yr.

Please list all park units that are covered by your answers.

(5)

1. _____
2. _____
3. _____
4. _____
5. _____

___ PARK UNITS REPRESENTED

1

FUNDING

1. All parks have a certain amount of identified maintenance needs that should be met to maintain park assets in satisfactory condition. Regardless of how much your regional office may say is available to your park or may say your park should ask for, please tell us what you believe is the total value of maintenance needs your park has identified for each of the following budget catagories for FY 1987. (Round dollar amounts to the nearest thousand)

Budget Category	Value of Identified Maintenance Needed		
Base maintenance	$[illegible],000	(6-11)	Questions 1 and 2 are totals for all park units responding
Cyclic (including regular cyclic, cultural cyclic, and repair/ rehabilitation)	$[illegible],000	(12-17)	
Other (specify)	$[illegible],000	(18-23)	

2. For each of the following maintenance categories, please enter the appropriate dollar values in the table below. Enter the amount of maintenance funding your park requested from the region for FY 1987 and the amount your park received for maintenance activities in your park in fiscal year 1987. (Round dollar amounts to nearest thousand. Enter 0 if none.)

Budget Category	Amount Requested		Amount Received	
Base maintenance	$162,516,000	(24-29)	$161,954,000	(42-47)
Cyclic (Including regular cyclic, cultural cyclic, and repair/ rehabilitation)	$105,695,000	(30-35)	$38,903,000	(48-53)
Other (specify)	$46,608,000	(36-41)	$7,231,000	(54-59)

3. If the amount requested for fiscal year 1987 was less than the amount identified, why, in your opinion, didn't your park request funding for all maintenance needs? (Check all that apply) (60-65)

1. [ ] Did not have a sufficient inventory of needs to support additional requests
2. [ ] Resubmitted last year's request with few or no changes
3. [ ] Region suggested or instructed park to limit requests
4. [ ] Tailored request to our expected funding level
5. [ ] Other (specify)
6. [ ] N/A: Requested identified needs

2

4. For the following types of assets, how does your park currently identify and estimate the value of the maintenance needed to protect and preserve these assets? (Check one box for each asset)

(66-76)

Type of Asset	1. Written inventory of needs	2. Past experience at park	3. Rough estimate	4. Total guess	5. Other (Please specify)	6. N/A - No such asset at this park
Roads (including bridges and tunnels)						
Public Use Facilities						
Administrative Areas						
Historic Structures						
Trails/Pathways						
Campgrounds						
Grounds						
Utility Systems						
Maintenance Equipment						
Housing						
Other (specify)						

3

5. In your opinion, about what percent, if any, of needed maintenance work will your park have to defer for each of the following assets based on your FY 1987 funding level. (Check one box for each asset)

ID (1-3)
CD2 (4)
(5-15)

Type of Asset	Percent Work Deferred: None	1-20%	21-40%	41-60%	61-80%	81-100%	N/A - no such asset in park	No response
	1.	2.	3.	4.	5.	6.	7.	
Roads (including bridges and tunnels)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Public Use Facilities	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Administrative Areas	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Historic Structures	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Trails/pathways	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Campgrounds	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Grounds	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Utility systems	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Maintenance Equipment	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Housing	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Other (specify)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

4

6. Of all the maintenance your park will defer in FY 1987, what percentage, if any, of the deferred maintenance will be for high priority needs? By high priority needs we mean maintenance needs that affect health and safety at your park. Please enter percent for each asset type below. Check N/A if your park does not contain an asset listed.

Type of Asset	Percent High Priority	1. N/A
Roads	_____ % (16-18)	[ ] (19)
Public Use facilities	_____ % (20-22)	[ ] (23)
Administrative Areas	_____ % (24-26)	[ ] (27)
Historic Structures	_____ % (28-30)	[ ] (31)
Trails/Pathways	_____ % (32-34)	[ ] (35)
Campgrounds	_____ % (36-38)	[ ] (39)
Grounds	_____ % (40-42)	[ ] (43)
Utility Systems	_____ % (44-46)	[ ] (47)
Maintenance Equipment	_____ % (48-50)	[ ] (51)
Housing	_____ % (52-54)	[ ] (55)
Other (specify)	_____ % (56-58)	[ ] (59)

Response to Question 6:

Park Asset	Number of Units Responding: No deferrals health and safety	Some or all health and safety
Roads	146	121
Public buildings	144	123
Administrative	181	86
Historic buildings	169	98
Trails	125	142
Campgrounds	208	59
Park grounds	170	97
Utility systems	158	109
Equipment	155	112
Housing	172	95

5

7. We are interested in how certain actions or events have affected your park's maintenance workload. If the following events have occurred at your park in fiscal years 1986-1987, please enter how much of an increase, if any, in your park's maintenance workload was caused by the following events? (Check one box for each event)

(60-68)

Event	1. Little or no increase	2. Some increase	3. Moderate increase	4. Great increase	5. Very great increase	6. N/A	No Response
Land acquisition (including exchanges)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
New construction	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Increased visitor services	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Longer visitor season	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
More visitors	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Increased regulatory requirements	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Acquisition of aging facilities	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Special celebrations	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Other (specify)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

6

8. If unmet maintenance needs have been present at your park in FY 1986-1987, how much of an increase, if any, in the number or frequency of the following problems have these unmet needs caused? (Check one box for each problem)

ID (1-3) CD3 (4) (5-16)

Problem	1. Little or no increase	2. Some increase	3. Moderate increase	4. Great increase	5. Very Great Increase	6. N/A	No response
Visitor complaints	137	73	31	3	1	20	1
Delayed openings	140	36	15	3	1	30	2
Visitor illnesses or injuries	180	23	4	0	0	52	3
Employee accidents	190	28	1	0	0	47	1
Building deterioration	50	82	78	28	18	9	2
Road deterioration	58	71	60	28	9	38	1
Trail deterioration	57	79	58	28	12	41	3
Campground deterioration	34	30	28	7	5	142	1
Exhibit deterioration	101	84	43	9	3	95	2
Grounds deterioration	84	89	57	14	3	89	1
Housing deterioration	65	67	47	11	7	140	2
Equipment deterioration	87	89	52	18	5	84	2
Other (specify)	1	5	13	4	2	47	265

7

9. For each of the following budget categories, please enter the appropriate dollar values in the table below. Enter the value of the total backlog of projects at your park in FY 1987 and the amount of funding obligated for these projects in FY 1987 for your park. (Round dollar amounts to nearest thousand. Enter 0 if none.)

Budget Category	Amount of Backlog	Amount Obligated	
Construction (not including new construction)	$_____,000 (17-22)	$_____,000 (41-46)	Totals for all park units responding
Federal Lands Highway Program (not including new road-building)	$_____,000 (23-28)	$_____,000 (47-52)	
Lump Sum (Emergency unscheduled)	$_____,000 (29-34)	$_____,000 (53-58)	
Other (specify)	$_____,000 (35-40)	$_____,000 (59-64)	

10. Of the total backlog identified in question 9, what percentage of the backlog was for high priority needs? By high priority needs we mean needs that affect health and safety at your park. Please enter percent for each asset type below. Check N/A if your park does not contain an asset listed. IDC(1-3) CD4-(4)

Type of Asset	Percent High Priority	Response: 1. N/A	Units Responding: No deferrals high priority	Units Responding: Some or all high priority
Roads	_____% (5-7)	[ ] (8)	173	94
Public Use Facilities	_____% (9-11)	[ ] (12)	188	79
Administrative Areas	_____% (13-15)	[ ] (16)	222	45
Historic Structures	_____% (17-19)	[ ] (20)	204	63
Trails/Pathways	_____% (21-23)	[ ] (24)	205	62
Campgrounds	_____% (25-27)	[ ] (28)	239	28
Grounds	_____% (29-31)	[ ] (32)	230	37
Utility Systems	_____% (33-35)	[ ] (36)	195	72
Housing	_____% (37-39)	[ ] (40)	214	53
Other (specify)	_____% (41-43)	[ ] (44)		

8

STAFFING

11. How many needed, authorized, and funded FTEs does your park currently have for its maintenance staff and for its entire staff for each of the following types of employees?

CNPS Base Maintenance FTE

Employee status	Needed	Authorized	Funded		Totals for all park units responding
Full time permanent	[illegible]	[illegible]	[illegible]	(45-53)	
Part time permanent	[illegible]	[illegible]	[illegible]	(54-62)	
Temporary/Seasonal	[illegible]	[illegible]	[illegible]	(63-71)	

ID (1-3)
CDS (4)

Total Park FTE

Employee status	Needed	Authorized	Funded	
Full time permanent	[illegible]	[illegible]	[illegible]	(5-16)
Part time permanent	[illegible]	[illegible]	[illegible]	(17-28)
Temporary/Seasonal	[illegible]	[illegible]	[illegible]	(29-40)

12. Has the number of funded base maintenance FTEs at your park increased, decreased, or remained the same since the beginning of fiscal year 1982. If it has increased or decreased, please estimate percent change.

1. [7] Increase (41) [illegible] Percent change (42-44)
2. [99] Decrease [illegible] Percent change (45-47)
3. [7] Remained the same
[9] No response

9

13. In fiscal years 1982 - 1987, has the number of funded base maintenance FTE at your park been more than adequate, adequate, or less than adequate to meet all routine base maintenance needs? (Check appropriate box for each year)

Fiscal year	Much more than adequate	More than adequate	Ade-quate	Less than adequate	Much less than adequate	(48-53) No response
	1.	2.	3.	4.	5.	
1982	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1983	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1984	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1985	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1986	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1987	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

14. Did your park request funding for any additional base maintenance FTEs for FY 1987? (Check one)

(54)

1. [ ] Yes ----> SKIP TO QUESTION 16
2. [ ] No
3. [ ] N/A: Number of FTEs adequate for FY 1987 ----> SKIP TO QUESTION 16

15. Why did your park not request funding for any additional base maintenance FTEs for FY 1987? (Check all that apply)

(55-58)

1. [ ] No authorized positions open
2. [ ] We knew that no money was available for maintenance FTEs
3. [ ] Region suggested or instructed parks not to request funds for maintenance FTEs
4. [ ] Other (Please specify)

16. If the number of base maintenance FTEs has not been adequate any time since the beginning of FY 1982, how much of an increase in the number or frequency of the following problems has the shortfall caused? (Check one box for each)

(59-71) ID (1-3) CD6 (4)

Problem	1. Little or no increase	2. Slight increase	3. Moderate increase	4. Great increase	5. Very great increase	6. N/A
Visitor complaints						
Delayed openings						
Visitor illnesses or injuries						
Employee accidents						
Building deterioration						
Road deterioration						
Trail deterioration						
Campground deterioration						
Exhibit deterioration						
Grounds deterioration						
Housing deterioration						
Equipment deterioration						
Other (specify)						

11

ROADS

17. Please list how much your park received for its fiscal year 1987 budget for road, bridge, and tunnel maintenance in the following categories. (Round to nearest thousand dollars. Enter 0 if none.)

$ 25,811,000	Park base maintenance	(5-10)	Totals for all park units responding
$ 6,922,000	Cyclic maintenance (Including regular cyclic, cultural cyclic, and repair/ rehabilitation)	(11-16)	
$ 1,661,000	Other (Please specify)	(17-22)	

18. How does the amount allocated for maintaining park roads in fiscal year 1987 generally compare to the average annual amount allocated during the period fiscal years 1982 through 1986? Please include the effect of inflation in your figures. (Check one)

(23)

1. [ ] Greatly increased
2. [ ] Slightly increased
3. [ ] About the same
4. [ ] Slightly decreased
5. [ ] Greatly decreased
6. [ ] No basis to judge/Don't know/Not applicable

19. Has the amount of maintenance your park has been able to perform under FY 1987 funding enabled your park to improve the condition of its roads, bridges, and tunnels; enabled your park to maintain the condition of its roads, bridges, and tunnels; or allowed for the deterioration in condition of its roads, bridges, and tunnels? (Check one box for each; if no roads, bridges, or tunnels in your park check appropriate N/A box)

(24-26)

	1. Major improvement in condition	2. Minor improvement in condition	3. Maintained current condition	4. Minor deterioration in condition	5. Major deterioration in condition	6. N/A
Roads						
Bridges						
Tunnels						

20. What percent of roads, bridges, and tunnels in your park would you currently characterize as being in:

good condition: requiring only routine preventative maintenance;
fair condition: requiring some rehabilitation and repair as well as routine maintenance;
poor condition: requiring substantial repair or reconstruction to restore to satisfactory condition?

Enter a percent (or 0) in each box so the total equals 100%. If no roads, bridges, or tunnels in your park check appropriate N/A box.

	1. N/A	Good condition	Fair condition	Poor condition	Total	
Roads		%	%	%	= 100%	(27-36)
Bridges		%	%	%	= 100%	(37-46)
Tunnels		%	%	%	= 100%	(47-56)

21. Since the beginning of FY 1982, has the overall condition of your park roads, bridges, and tunnels deteriorated, improved or remained the same? (Check one box for each row; if no roads, bridges, or tunnels in your park check appropriate N/A box)

(57-59)

	1. Greatly deteriorated	2. Moderately deteriorated	3. Remained about the same	4. Moderately improved	5. Greatly improved	6. N/A	No response
Roads							
Bridges							
Tunnels							

22. Since the beginning of FY 1986 has your park had to limit road, bridge, or tunnel use in any of the following ways due to deterioration in the physical condition resulting from insufficient maintenance? (Check one box for each,* if no deterioration check N/A)

(60-63)

	1. Yes	2. No	3. N/A	No response
Close roads				
Restrict traffic				
Impose load limits				
Other (Please specify)				

Maintenance Management System

23. Excluding the service-wide Maintenance Management System (MMS), does your park have a formal system/program to manage maintenance activities? (Check one)

(64)

1. [ ] Yes

2. [ ] No -----> SKIP TO QUESTION 25

24. If so, describe the system below or attach a summary of its purpose and functions.

(65)

25. Has any MMS implementation training started at your park? (Check one)

1. [ ] Yes (66)

2. [ ] No -----> SKIP TO QUESTION 27

26. If yes, how would you generally describe the training? (Check one)

1. [ ] Excellent (67)

2. [ ] Good

3. [ ] Fair

4. [ ] Poor

27. If you have any further comments on any of the subjects in this questionnaire please add them here.

(68)

Comments From the Department of the Interior

United States Department of the Interior

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P.O. BOX 37127
WASHINGTON, D.C. 20013-7127

IN REPLY REFER TO
F4215(610)

FEB 23 1988

Mr. James Duffus III
Associate Director
Resources, Community and
Economic Development Division
U.S. General Accounting Office
Washington, D. C. 20549

Dear Mr. Duffus:

We have reviewed the draft audit report, "Park Service Managers Report Shortfalls in Maintenance Funding" (GAO/RCED-88-41BR) and its findings and observations. Our comments follow.

The extensive efforts of the General Accounting Office to directly survey park area managers throughout the National Park System to determine their reactions and perceptions is commendable. The findings are generally consistent with the Service's own task force report of 1984 entitled "New Initiatives Following the Park Restoration and Improvement Program (PRIP)."

In that Report, a summary statement prepared at the conclusion of the task force's review (p. 5) stated: "Data available to this task force from Servicewide systems indicate that even after PRIP a considerable backlog of needed repair and rehabilitation work will remain. The data also indicate that the overriding maintenance problem that led to this backlog has not been resolved. In short, PRIP set into motion the correction of the life, health, and safety deficiencies of the National Park System, but the problems addressed by PRIP will persist and recur until maintenance, rehabilitation, and reconstruction are accomplished on a systematic basis."

The GAO efforts to determine the maintenance situation based on individual park management reports has verified that the PRIP Task Force Report was essentially accurate and that the need has indeed persisted and has perhaps grown more acute.

The Service feels that, as identified by the GAO, the most economical methodology to deal with maintenance is through a systematically planned, long term funded program of ongoing preventive maintenance. To provide the necessary planning and methodology for such a program, the Service has endorsed the concept of Maintenance Management and is proceeding at a reasonable pace to assure a successful implementation of a well designed management system for its maintenance programs.

As stated by the PRIP Task Force:

> "The overall theme of this task force report is that the large and diverse NPS infrastructure should drive program needs. Unfortunately, the requirements of the infrastructure are frequently underestimated."

Both that report, and now this GAO report, have verified this concept.

Now on p. 24

The Draft GAO report (p. 29) states that "The result of crisis-oriented maintenance such as this is that parks react to maintenance problems rather than planning for and performing preventive maintenance."

In addressing these concerns, NPS Maintenance Management will provide a direct, objectifiable tie-in between the needs of the infrastructure and yearly program requirements, as well as a means of optimizing annual productivity within available funding and staffing levels. Maintenance Management will also provide better identification and justification of long term preventive maintenance needs and provide park managers with the needed information to best address and prioritize those needs within available funding levels.

It should be made clear, however, that Maintenance Management alone, no matter how much improvement in productivity is achieved, cannot compensate for the severe existing shortfall in maintenance funding and staffing.

Sincerely,

William Penn Mott, Jr.
Director

Related GAO Reports

National Park Service Needs a Maintenance Management System (GAO/RCED-84-107, June 1, 1984).

National Parks' Health and Safety Problems Given Priority; Cost Estimates and Safety Management Could Be Improved (GAO/RCED-83-59, Apr. 25, 1983).

The National Park Service Has Improved Facilities at 12 Park Service Areas (GAO/RCED-83-65, Dec. 17, 1982).

Facilities in Many National Parks and Forests Do Not Meet Health and Safety Standards (CED-80-115, Oct. 10, 1980).

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